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A Possible Tire Shortage

IS THERE an underproduction of tires? Recent estimates give that impression. For the 12,393,263 cars registered in the United States for 1923 it is figured that there is an annual consumption of 2.8 for each car, or a total of 34,701,136 tires. Available figures show that during the first six months of 1923, 2,025,000 motor cars were built, and these would require for original equipment 8,100,000 tires. If this amount be added to 17,350,568 (a six months' supply for the 1923 registered cars) it would appear that 25,450,568 tires should have been produced in the first half of the present year to meet actual needs.

Reports made by rubber manufacturers to the Rubber Association of America and calculations as to non-members' output indicate, however, that the total production for the first six months did not exceed 24,591,916 tires, which would imply a shortage of 858,652, or the difference between 25,450,568 and 24,591,916. Even conceding that 500,000 cars, which would have used 700,000 tires, have not been running, it would still appear that there has been a shortage of some 158,652 tires for six months, or at the rate of 317,304 for the year.

Growers' Profits Not Bulging

OPPONENTS of restricted sales of plantation rubber freely prophesied when the Stevenson plan was put into effect that its immediate effect would be inordinate profits for the planters, while the planters contended that they would benefit more in market stabilization than in any profit enhancement. Just how near each side came to guessing the outcome may be judged from a study of reports of planting companies for the past year, during which period raw rubber conditions have been steadily trending toward normal. Nor have rubber men been alone in watching developments in this direction. Financiers and industrial leaders generally who are concerned about the price and supply of many kinds of raw material have been close observers of the rubber growers' experiment in government-regulated marketing.

What may be deemed a fair reflection of the growers' position is afforded by the recent report of the Vallambrosa Rubber Company, Ltd., one of the oldest and most conservative of the strictly-plantation concerns. The company states that during the twelve months prior to August 16, 1923, raw rubber was produced at an all-in cost of under 7 pence per pound, and a loan of £10,000 was paid off. The earnings justified a dividend of 4 pence per share and increasing the carry-over from £1,600 to £7,000. The production cost, it is stated, is higher this year than last because restriction will be in operation the whole year, but, as the report states, "while it is yet too early to pass judgment on the restriction scheme, it has proved itself worthy of a fair and continued trial."

Manifestly, estate conditions and management must be exceptionally good when rubber can be delivered in London so cheaply, while many other growers have been unable to keep the all-in cost from mounting to even double that of Vallambrosa. While shareholders are gladdened with a report much better than that of 1922, the fact that they must surrender one-quarter of their dividend for income tax dampens their joy, for the British rate is 5 shillings on the pound. The 4 pence allotted on each share (market value about 14 shillings) means a dividend of about 2½ per cent. At that rate, when the income tax is paid, an investor would be entitled to scarcely 6 cents on what had cost him $3.22. How ruefully the Vallambrosa stockholders must look back to the flush period during the fifteen years following 1906, and in which time the company paid dividends totalling 1,386½ per cent, or an

average of 92.43 per cent per annum. Restriction has averted a crisis in the plantation industry, but it insures no early return of the good old days.

Balloon, Doughnut, or Air Cushion

JUST what the public will decide to call the latest type of pneumatic tire is a question. The drift at present seems to be toward a resurrection of the oldtime "balloon" that greeted the pneumatic when it began to dispossess the solid tire. Or it may be that "doughnut" will so appeal that in time it will win general respectability and recognition. Possibly the Knickerbocker tire element would render this "olykoek." J. E. Hall, the Firestone expert, advocates the term "air cushion." Another suggestion is "supersize." Dr. Phillip Schidrowitz calls the tire "low pressure." Of all, the last name seems to be the simplest, the most adequate and the best.

But in the light of past rubber nomenclature it rests not with the tire men or with the rubber trade but with the untrammelled public. History proves this. Solid tires were and are "hard rubber" tires to the vast majority of users. Rubber coats have appropriated the oil clothing term of "slickers." Goodyear's "gum elastic," a wonderfully apt term, died at birth, while "india rubber" survived.

The name of the new tire, therefore, rests on the "Knees of the Gods"—gallery gods.

True Test of a Tire

QUITE within their rights and displaying what might ordinarily be regarded as good business sense, tire users frequently call on dealers and dealers on manufacturers for exact information as to the relative percentage of new and reclaimed rubber in casings sold or made by them. Many purchasers have an idea that the higher the proportion of new rubber in a tire the longer it will last and, conversely, the greater the percentage of reclaim the shorter its life; and if a direct, unequivocal reply be not forthcoming they become suspicious. Rubber makers are not supposed to have private formulæ like other manufacturers. It is hard to convince many users of rubber that to make it really serviceable it must be suitably "alloyed," just as gold is reduced from the impracticable 24-carat fineness to 18, 14 and even a lower carat to make it stand wear and tear and to give it maximum usefulness. Some of the inquiries are undoubtedly honest, but others are probably prompted by jealous rivals who seek to discredit more fortunate competitors.

Even were precise data imparted to the average buyer, the chances are that after his curiosity had been satisfied he would really be no wiser than he was before. A statement showing new and reclaim rubber percentages might mean much or nothing at all, for there are a hundred types of new rubber and numerous kinds of old; there is a host of compounding ingredients used, and these in turn, with the new and reclaimed rubber, are variously affected by the scores of different vulcanizing temperatures ranging often from 266 to 300 degrees F., with dry or open steam curing; and then there are the diverse manipulations in tire construction, each maker having his favorite process. Hence it is even likely that a tire made of 90 per cent first grade reclaim might give much more mileage than one made of 90 per cent pure, new rubber that is of low quality, which has been overworked or been ill-compounded, or been inefficiently applied to a carcass.

After all, the real test of a tire is, as has been aptly said, what the speedometer tells the pocketbook; but since few can afford either the time or the outlay for such a trial the safest course for them to follow is to buy only wares that have stood the test. The truest measure of the value of a tire is its use, not its first cost. A cheap tire, like anything else, is generally cheap in every sense, and eventually it must give place to the article of outstanding merit. Little need the buyer trouble himself about percentage perplexities if he will buy only the product of a reputable concern, for, in the final analysis, the latter endures and expands only because it has been found to invariably "deliver the goods."

Cable-Laying Activity

FOLKS who feared that the rapid rise in radio communication would soon make ocean cables superfluous may be surprised to learn that for secrecy, certainty, and efficiency, governments and great commercial concerns still consider the submarine lines as not only indispensable but unlikely to be superseded by wireless for a long time to come, unless some remarkable improvements be made in aerial telegraphy. Indeed, several important developments in submarine communication are in progress that, while less spectacular than wireless, are of considerable interest to the rubber and gutta percha industries. Italy is preparing for a 6,000-mile line to Buenos Aires, the British government is paralleling its line from Canada to Australia, Holland is laying 1,500 miles of cable in the Dutch East Indies, and the United States Signal Corps has recently given an order in England for 1,806½ miles of gutta percha cable costing $1,244,000 to replace the twenty-year-old worn-out and inadequate rubber cable connecting Seattle and Sitka, Alaska. The new cable will be the first link in a government-owned and operated line that will soon span the Pacific, making a third with the British line to Vancouver and the Mackey line to San Francisco.

While wonder may be expressed at the government going abroad to have a cable made, the federal authorities realize only too well that, marvelous as has been the progress of the United States in wire and rubber manufacture, in the art of making deep-sea gutta percha-insulated cable it has made practically no headway whatever.

"LABOUR NOT TO BE RICH; CEASE FROM THINE OWN wisdom . . . . . for riches certainly make themselves wings; they fly away." Proverbs 23: 4, 5.

Safety First and Efficiency

Safety Devices for Mills and Calenders—Braking Facilities—Electric Clutch Brake—Stopping Limits for Mills and Calenders—Guarding Gears and Stuffing Boxes

By Joseph W. Thropp[1]

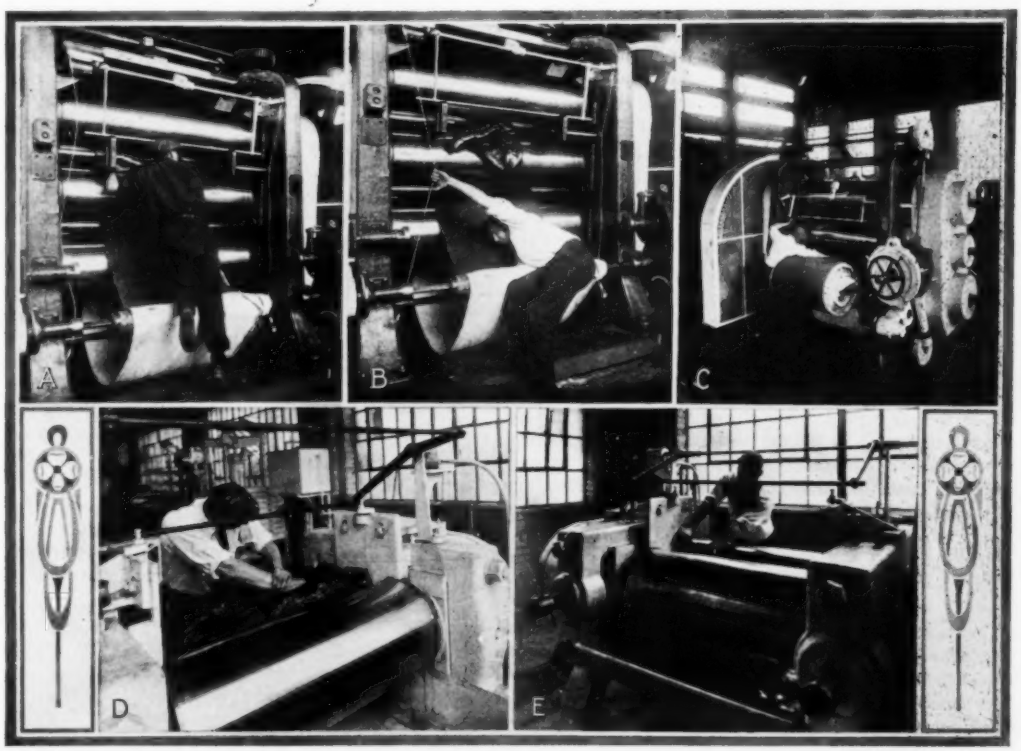
I HAVE always considered efficiency to be a part of "safety first," and have always given this thought to any apparatus with which our machines have been equipped, feeling that the highest standard of "safety first" is the highest point of efficiency, and that both should always work together, like employe and employer in the manufacturing business.

Our company has been manufacturing rubber mill machinery and safety devices for over thirty years, having designed and built guards and safety devices of all descriptions for the rubber industry. To develop the most efficient line of safety devices and to run proper tests under actual working conditions, our research laboratory is fully equipped with the necessary machinery. After many years of research the results have proved conclusively that one of our greatest assets to the manufacturers is *safety first*, and in fact equally important with efficiency.

It is impossible in many cases to put the same class of levers, bars, controls, and the same class of quick-stop mechanism on the old type machines. Manufacturers, however, should always purchase new machinery fully equipped with guards, proper lever controls, and safety stops which are produced by the machinery manufacturers and with which the machines are equipped at the time they are built.

I also believe that every state in the Union should pass a law prohibiting any new machinery from being operated without first being passed upon by the Labor Department inspectors as to the question of safety appliances. I believe that the State Labor Departments should not allow manufacturers to ship machines into their states unless they are fully equipped. This should be a law in all states.

Furthermore, insurance companies and their ratings should provide for penalizing concerns not properly equipped with safety appliances which are not frequently tested and maintained. In one of the latest industrial compensation rating schedules under rubber mills, they specify the stop of rubber mills to be instantaneous. This means nothing as some distance should be speci-



(A) SHOWS FEEDING RUBBER BETWEEN ROLLS. BOTH HANDS OF OPERATOR ARE CAUGHT IN RUBBER BETWEEN ROLLS, AND HIS HEAD STRIKES SAFETY BAR, STOPPING MACHINE. (B) SHOWS ARM CAUGHT IN CLOTH BETWEEN LINER ON TAKEUP, THE OTHER HAND OPERATING CABLE PULL, TO STOP MACHINE. (C) THREADING CLOTH IN CALENDER, HAND IS CAUGHT BETWEEN CLOTH AND ROLL; OTHER HAND OPERATES CABLE PULL TO STOP MACHINE. ALSO CLEARLY SHOWS TYPE OF GUARDING FOR CONNECTING GEARS AND STUFFING BOXES. (D) CUTTING RUBBER TOO CLOSE TO TOP OF ROLL, ONE HAND IS CAUGHT BETWEEN ROLLS. OPERATOR TRIES TO PULL IT OUT WITH OTHER HAND AND SAFETY DEVICE IS OPERATED BY HIS HEAD. (E) OPERATOR IS CLEANING GUIDE WITH KNIFE AT THE BACK OF MACHINE. HANDS CAUGHT BETWEEN ROLLS, AND OPERATOR RAISES UP, STOPPING MACHINE BY STRIKING HEAD ON BAR CONTROL.

[1]Wm. R. Thropp Son's Co., Trenton, New Jersey. Paper read before the meeting of the Rubber Section, National Safety Council, held at Milwaukee, Wisconsin, October 3, 1923.

fied. It is impossible to stop any piece of machinery instantly.

The first point that I will take up is the question of safety stops on rubber mills and calenders at the point of operation, which is the most serious of all. In all our designing we are governed by the following thoughts: When both hands are caught between the rolls, some portion of the operator's body must operate a bar, lever, or rope to stop within a limited distance of the surface travel of the rolls.

Rubber Mills—Location of Safety Trip Bars and Levers

Safety trip bars should be provided at front and back of all rubber mills to operate up and down and should be the full length of the rolls, the levers to be so constructed at a center bar that the front bar can be adjusted higher than the back bar, or the back bar higher than the front, to suit the class of work and also the height of the operator. Normal location of the safety trip bar over the front roll should be 2 to 3 inches in from the edge of the front roll, and when in its normal position should be 21 inches from the top of the front roll with the provision made for adjustment, whether up or down, of 3½ inches in either direction.

The normal location of the safety trip bar over the back roll is at the same horizontal plane as the safety trip bar over the front roll and 2 to 3 inches in from the edge of the back roll. It should be arranged with an adjustment of 3½ inches up or down, but in normal position must be horizontal with the normal position of the front bar. There should be no fixed rod in the center between the rolls.

Rubber Calenders—Safety Trip Bars, Levers and Cables

Safety trip bars should be provided at front and back of all rubber calenders to operate in a horizontal plane by a push or a pull, and should be carried the full length of the rolls. The safety bar on the back or feed side operates just above the guide and not over 72 inches above the floor which the operator works on. On the opposite side of the calender, the threading side, the bar should be the same height as the center between the top and center roll, and not exceed 72 inches above the floor. Both sides, the back side and the threading side, should be provided with cables connected to the safety mechanism and to be not less than one inch from the side of the frame at a distance of not more than 12 inches from the face of the roll, and to run within 6 inches of the floor.

Braking Facilities

In my opinion gravity applied brakes are the best for all classes of "safety first." For instance, we will take the railroad signals which have been changed in the recent years to the gravity, so that if the mechanism should fail, the signal is at once thrown on, which is one of the best principles I could give to the gravity brake. I do not believe in depending on electric currents or any other class of power for braking.

For individual motor driven mills and group driven mills with motors up to 200 h. p., and alternating current calenders, we use our mechanical and electrical patented safety stop, which operates as follows:

The overhead levers and bar controls operate a small switch which is in series with the undervoltage release on the motor, and we have it so timed that after the circuit has been opened a separate rod or cable control trips and drops a weighted lever which applies a brake for stopping the momentum.

In addition to this, we have a small switch connected to the lever on the hand reset brake, that applies the weight. This switch is in series with the undervoltage release, so when the brake is set it is impossible to start the motor. The apparatus has been on the market for over two years, and has proved a wonderful success, as there is practically nothing to get out of order and it is always sure to operate. It will stop a calender in practically the same length of time when at high or low speed.

We equip our calender when driven by direct current with dynamic braking, and are arranging with one of the largest electrical concerns to make us a special control panel, so we can stop a calender up to 125 feet a minute in 12 inches' travel.

Differential Electric Clutch Brake

For large mill lines, group drives and engine drives we have a patented differential electric clutch brake of a heavy low-speed type. The principle of this clutch brake is as follows:

A steel bull gear keyed to a drive shaft, and a heavy case that revolves around the drive shaft with a gear in the center, and a series of specially treated steel pinions around the periphery of this gear. Inside the heavy case the gears are running in oil. The case on one side is equipped with a set of brass collector rings, feeding the current through two brushes—through the collector rings, to each magnet, and the magnets are wired in parallel so in case one magnet goes out the others will still be operating. At the opposite end of the case is a flange coupling that bolts against a half coupling on the driven shaft.

Up to 100 r.p.m. on the drive shaft we use a ratio of 10:1. At present we are making this size clutch with 4, 5, and 6 magnets. The four-magnet clutch brake at 100 r.p.m. will transmit 600 h.p. The five-magnet clutch brake at 100 r.p.m. will transmit 750 h.p. The six-magnet clutch brake at 100 r.p.m. will transmit 900 h.p. There is no maximum as to the horsepower these clutches will transmit, as they can be built as large as required. There is, however, a minimum; we do not intend to build small clutches at present owing to the cost.

The pinions have their shaft extended through the outer portion of the case, and at each pinion there is a small cone-type magnet brake for stopping the pinions from revolving. When the pinions stop revolving, the drive shaft drives the driven. When the pinions are released by releasing the current, the drive shaft drives the gears which revolve inside the case, and the pinion shaft revolves inside the magnets, and the clutch will be at rest.

This clutch brake is very easily adjusted as to its air gap and has stops so it cannot have less than 1/64 of an inch gap. With our construction and design it is very similar to the question of lifting a load, for instance, of 600 pounds. As I have compared it with horsepower we would have four men equally distributed around the load with bars—with a leverage of 10:1. Each man would be lifting ¼ of the load with a leverage of 10:1. If this was a direct type of clutch you would have one man lifting the full load without any leverage.

These clutches have been in operation for over two years and a number of them are being built at the present time. The smooth operation of the starting of this clutch is one of its particular advantages. The brake for stopping the momentum is very large in diameter, being 51 inches on all three of these sizes. The width is in accordance with the horsepower, giving a quick stop to the clutch. The best place to put the clutch brake is always at the low-speed shaft.

In using high-speed motors with a large gear ratio the driven gear on the shaft, being of large diameter, increases the WR square. By putting the clutch brake at the motor instead of on the driven shaft the strain of stopping is very serious to the gears and the bearings; therefore we recommend placing the clutch brake on the low-speed shaft, thus overcoming all these troubles.

Our most efficient line drives are 100 r.p.m.; therefore we are putting out a motor at 100 r.p.m. with the clutch brake directly on the motor shaft. Owing to the great losses due to the loss in wattless current, the synchronous motor is becoming very popular and very efficient. In using the clutch brake on the synchronous motor the designer is enabled to construct it with a normal pull-in torque for starting, because the motor can be started first and the clutch thrown in afterward. The motor can be designed with a large pull-out torque and a normal pull-

in. This will increase the efficiency, as a motor with a large pull-in torque or arranged for dynamic braking has to be of much larger size.

The efficiencies including the motor losses of the special design motor of 300 h.p. type with .8 per cent leading power factor, 100 r.p.m., are as follows:

	Per Cent
Full load	87.8
Three-quarter load	86.3
One-half load	83.3

If the motor was much larger to give a pull-in torque there would be a big loss in the normal operation of the motor, as between half load and full load there is 4.5 per cent difference in efficiency. If the motor has to start without a load it would have to be designed with 150 or 200 per cent pull-in torque, which would give 200 per cent inflow of current. This would be very inefficient.

In using the electric clutch brake on engine drives, in many cases we can put them directly on the crank shaft of the engine. Clutches up to 900 h.p. are 52 inches in diameter, which makes them very easy to install on engine drives, especially of low speed, the space required being so small.

Stopping Limits

Individual motor driven rubber mills up to and including 16-inch diameter rolls are equipped with the mechanical and electrical safety stop previously described, and will stop these mills in not more than 6 inches of the periphery of the front roll. Mills with rolls 18 inches in diameter will stop in a distance of 9 inches, and the rolls 20 and 22 inches in diameter will stop in 12 inches.

THE STOP LIMITS FOR GROUP DRIVEN MILLS. Sixteen-inch diameter rolls will stop in 9 inches; 18-inch diameter rolls will stop in 13½ inches; 20 and 22-inch diameter rolls will stop in 18 inches.

A number of tests made with the clutch brake and with the mechanical and electrical safety stop have proved these figures, except in cases of old-type engine drives where it is impossible to stop these machines owing to the old type of clutches and pinions and light shafts; in these cases special allowance will have to be made.

STOPPING LIMITS FOR INDIVIDUAL MOTOR DRIVEN CALENDERS. With alternating current calenders either a reset brake or electric solenoid brake is used. 30 feet per minute will stop in 2 inches; 60 feet per minute in 5 inches; 60 to 120 feet per minute in 15 inches.

On direct current, motor driven calenders—30 feet per minute will stop in 2 inches; 30 to 60 feet per minute in 6 inches; 60 to 120 feet per minute in 18 inches.

With the new control panel, which one of the electrical manufacturers is going to build for us, we can stop the calender at 120 feet per minute within 12 inches.

Guarding Gears and Stuffing Boxes

One of the most important guarding features is that of protecting the roll-neck gears. In this case efficiency is considered with "safety first" by placing an oil pan under the gears and a tight guard over them; by slipping two thimbles with fly nuts over the stuffing boxes, which can be easily removed, and thus guarding the stuffing boxes and gears so they can be run in oil. Owing to the space between the machines it is very necessary that the gears and stuffing boxes be properly guarded. Furthermore, in reference to gear guarding, I would recommend using perforated metal not less than 18-gage for this class of work, and exceptionally well braced guards.

Mold, Core and Tire Templates

ACCURACY and uniformity of tire equipment are practically impossible without the control afforded by sets of master templates laid out direct from the designer's drawings. From the master templates are derived the working templates for checking and tire building purposes without which close working and inspection are impossible.

Master Templates

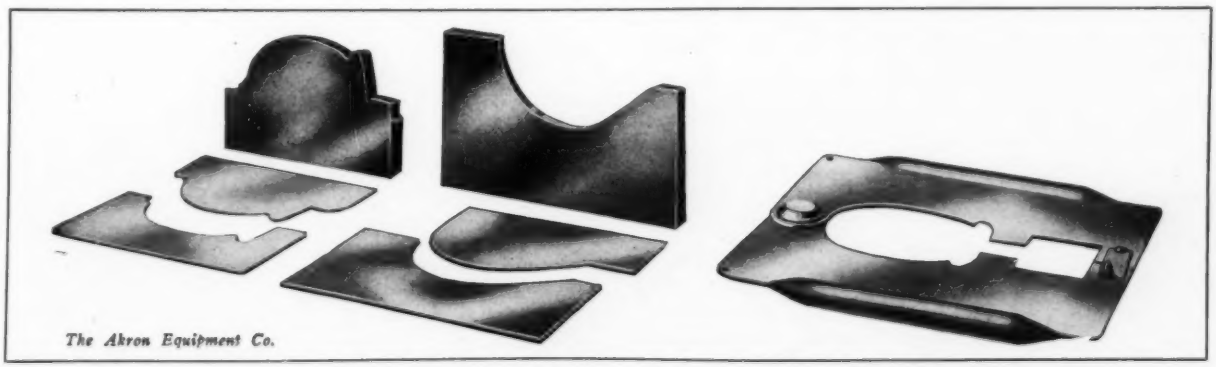
Master templates made of steel are essentially reference standards and have the accuracy of precision instruments. Making such templates is a specialty in tool making demanding much skill, patience and care on the part of an excellent workman.

In matching a working template and the cutting tool to agree with it the work must continue until the shape agrees with the master template to within 0.001 of an inch which is less than half the thickness of a hair. This is necessarily the work of experts.

By means of master templates only can accuracy be secured in carrying out the design and uniformity of each mold and core in the important feature of correctness of profile.

Tire Building Templates

Tire building templates are used in the tire production department to enable the builder and inspector to check the proper volume and distribution of the raw stock. Their frequent use is a guard against production of buckled tires.



Master and Working Templates for Tire Molds and Cores

Hinged Tire Building Template

A convenient form for a building template has a hinged form that can be closed over the tire while it is on the building core. The sides are easily grasped by the hand grips provided at each side and a hook latch holds the template closed, leaving the operator's hands free to turn the tire about for inspection.

Reels for Insulated Wire and Cable Work[1]

Standard Types—Stranding Reels—Vulcanizing Reels—Special Types

REELS and spools, common equipment in the wire and textile industries, also find place in various divisions of the rubber industry. Many special purposes might be cited where some form of reel or revolving stand is used in rubber making. These naturally have to do with handling long length stock, such as wire, cord, tubing machine products and sheet or strip stock. Standardized pressed steel reels are best for such uses because of their strength, durable construction, relative lightness, and ability to stand vulcanizing temperatures when necessary. Some of the forms of reels specially adapted for wire insulation and cable making are here illustrated and briefly described.

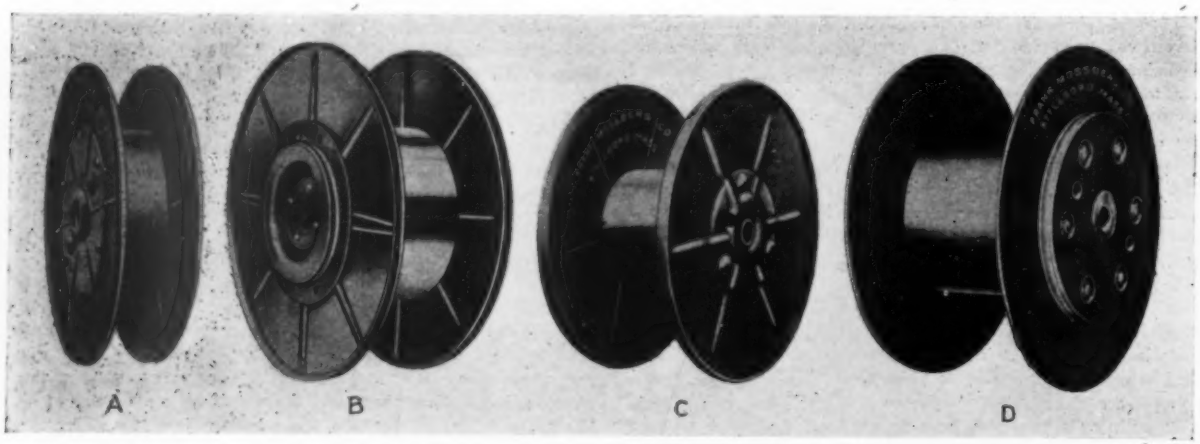


Fig. 1.—A. B. and C. Accepted Types of Wire and Cable Reels. D. Heavy Type Stranding Reel

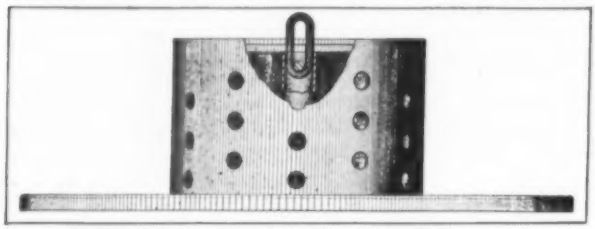


Fig. 2.—Special Vulcanizing Reel

Standard Reels

Various stages of the process of making insulated wire and cable require the use of well built reels of accepted types, such as A, B and C in Figure 1. These are built of steel in various capacities, traverse and diameter of barrel, and with other special features as may be required for the work to be done.

For braiding, wire manufacturing and general shop use a recognized standard reel is used. Its heads are reinforced with heavy stiffening ribs and the barrel is centered on a recess at the center of the head.

Stranding Reels

The requirements of strength and individual service are probably more severe on reels used for stranding and cabling than any other work required of them. Therefore such reels are provided with a friction shield on the end, thick heavy type of heads and sturdy construction throughout, as shown in Figure 1 at D, to meet these conditions.

Another important feature of stranding reel construction is a sufficiently long true cast iron bearing for rotating without wear on the spindle and a pipe connecting the inside ends of these castings as a lead for the spindle, also a center spacer for the construction as a whole.

Vulcanization Reels

A special reel for insulated wire or cable vulcanization is that shown in Figure 2. This reel is built with a perforated drum and single flange upon which the coil of wire rests in the heater. It is handled by an overhead hoist connecting with the link located in the center of the reel. When it is to be carried any distance around the works it is transported on a truck. The wire or cable is wound onto the reel and taken off by placing the reel on a small turntable suitable for the purpose.

A lighter form of wire vulcanization reel is shown in Figure 3. This is of pressed steel with holes pierced through both heads and the barrel for circulation of steam and proper drainage.

Other Types

There is a reel known as a "take-down reel." One head is so attached that it can be readily and quickly removed and when put in place it will stay without becoming loose.

A mounted form is used for holding and delivering wire to insulating machines. It is useful also for wiring suction hose or wire armoring hose of any kind.

General handling of bare or insulated wire in process of manufacture and shipping is best done on plain rolled flanged pressed steel spools.

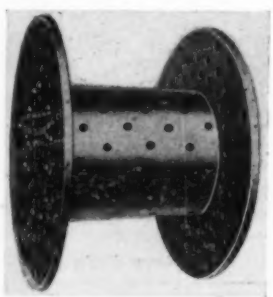


Fig. 3.—Standard Vulcanizing Reel

MEXICO'S IMPORTATIONS OF U. S. MISCELLANEOUS RUBBER GOODS, which during the year 1922 totaled $148,942, have already reached in the first seven months of 1923 a value of $103,773. With Cuba the advance is even greater, her 1923 figure being $78,519 as compared with her total for the entire year 1922, or $101,787.

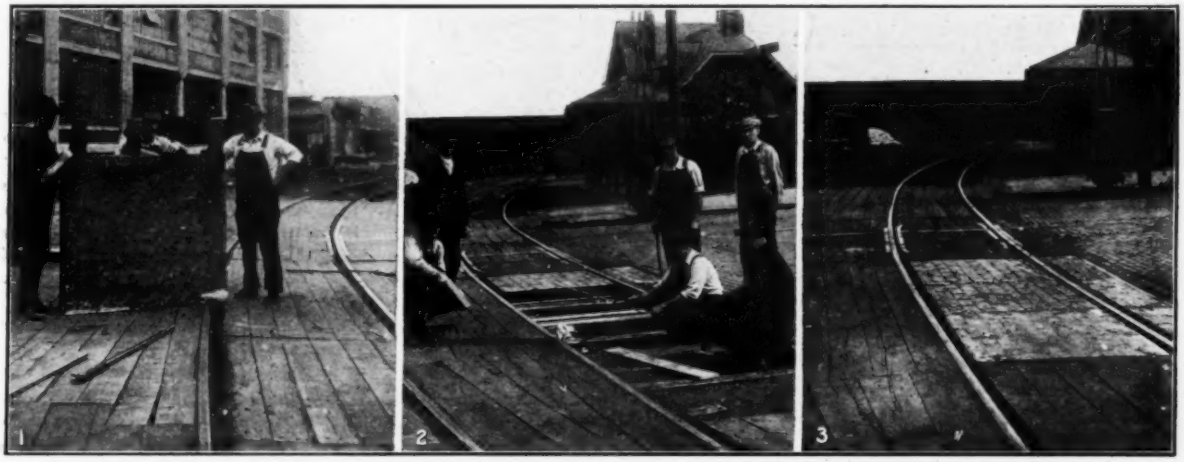
[1]DATA AND ILLUSTRATIONS FROM FRANK MOSSBERG CO., ATTLEBORO, MASSACHUSETTS.

Rubber Pavements Come to America

Railroad Crossing Pavements at Racine—Economy of Rubber Roadways—Recent British Developments

RUBBER pavements, which have come into extensive experimental use in England during the past few years, have at last made their bow to the American public. The Wright Rubber Products Co., manufacturers of rubber floor tile, Racine, Wisconsin, have developed a rubber paving brick which is being given a trial by the Chicago, Milwaukee & St. Paul Railroad at a crossing in Racine located on the main highway, known as Route 15, between Chicago, Illinois, and Milwaukee, Wisconsin, which is used by thousands of automobiles and heavy motor trucks every day.

The accompanying illustration shows the actual laying of the first section of rubber pavement. It also shows the bad condition of the 6-inch planking, laid ninety days previously, which the rubber has replaced. The completely paved crossing presents a splendid surface both from the point of attractiveness and cleanliness. People are amazed to see heavy trucks, horses, and all kinds of vehicles pass over it as quietly as over a carpet and leave no mark upon it. There is no movement of the section of pavement, inasmuch as the rubber blocks seemingly absorb the shock.



(1) SECTION COMPRISING RUBBER BRICKS AND CREOSOTED WOODEN BASE. (2) LAYING THE FOUNDATION. (3) SECTION IN PLACE.

Laying the First Section of Rubber Pavement for the C. M. & St. P. Ry. Co., at Racine, Wisconsin

How the Paving Blocks Are Made

These rubber blocks are made of old tires ground up, properly compounded, and molded separately under high pressure. They represent an adaptation of the patented lap feature of Wright rubber floor tile to rubber paving bricks, which permits the interlocking of the blocks underneath the surface, and in this particular case each brick was fastened to the creosoted wooden sub-base with two screws. This effectively takes care of one of the chief troubles with rubber pavements in the past. In this connection it may be well to explain that Wright floor tile is equipped with interlapping flaps provided with countersunk holes which make it possible to both nail and cement the tile to wood, cinder concrete, or any nailable surface.

The paving bricks are 2 inches thick and 4½ inches wide, by 12 inches long, following closely on the old tried principle of regular brick size. The sub-base, in this particular case, is made of 4 by 6 creosoted planks and bolted together with ½-inch bolts, although the blocks are adaptable for use with a concrete base. On the outside edges ½-inch guard rails six inches deep are securely bolted and the bricks are fastened as above stated on this wooden base with screws and cement. The crossing is made in sections five feet long, and each is lagscrewed to the ties underneath. This permits removal of each section by simply unfastening six lag screws if repairs are necessary to the ties or the tracks.

The toughness of the compound gives these rubber bricks great durability. Without grain, they will not splinter. Unlike concrete, they are not hard nor brittle and will not crumble nor dust. Properly installed and cared for they should last for years under the heaviest traffic because of their great resistance to abrasion. Not susceptible to temperature changes, to any appreciable degree, they will not curl nor warp.

Economy of Rubber Roadways

Busy railroad crossings, such as the one referred to at Racine, Wisconsin, require frequent expensive repairs, and the experiment with rubber pavement is being conducted in the belief that economy will result, even though the first cost is higher. That this is perhaps the greatest, though less obvious, advantage of rubber roadways in general was emphasized in a paper read by E. J. Edwards before the Institution of Rubber Industry at the Engineer's Club, London, England, on September 17. Mr. Edwards spoke in part as follows:

Unquestionably, rubber roadways have a great future, but it is unfortunate that so much time must necessarily elapse before any authentic data can be acquired to prove the claim made by the great majority of those engaged in the rubber industry—that in cities and large towns where there is continual heavy traffic, rubber roadways will be found to possess many advantages in addition to the reduction of noise to the absolute minimum. My personal opinion is that the greatest point in favor of rubber roadways will be proved to be economy, and by economy I mean *ultimate* economy. It is the only road material which will absorb and distribute the weight of the traffic carried. Other materials by their

non-resilience immediately transmit the loads to the foundations of the roads. We have had many examples of this in the London streets recently, where the foundations under eighteen inches of concrete have been broken up by heavy weights and constant pounding of modern city traffic.

Dessau the Pioneer Rubber Roadway Builder

Sketching briefly the important developments in British rubber roadway construction, Mr. Edwards said:

The first rubber roadway ever to be constructed was invented by Morland M. Dessau, and this was in 1913 in Southwark, at the junction of the New and Old Kent roads. The construction employed in this case was the mounting of a Yarrah wood block—3 inches wide and 8 inches in length—with a pure plantation rubber facing ½-inch thick.

Other Recent Rubber Roadways

In addition to the method of Mr. Dessau, several others have been used. We have all been very much interested in seeing rubber blocks laid round the Cenotaph in Whitehall. In this case a smooth concrete surface was prepared and on this hot pitch was spread just prior to laying the rubber. The rubber blocks are constructed with a groove on one side and a corresponding projection on the other, so that when laid they are really mortised and tenoned into position. Before being laid, each block is dipped in hot pitch.

Rubber roadways constructed by a different method have been laid in Glasgow and Edinburgh during the present year. In those cases, a rubber block measuring 9 by 4½ by 2 inches thick is fixed by means of an embedded steel spike into a concrete base block of slightly smaller dimensions. These blocks are laid on a prepared concrete foundation and are grouted in with cement or pitch. It is recommended by the makers that these particular blocks should be laid when the concrete foundation of the road is set, but still in a green condition, the surface of the concrete being smeared with a mixture of one part cement and three parts sand. While this is just damp, the rubber block with the under-concrete base molded to it, is set in position, and then grouted in with cement. The whole must then be left to set before traffic is allowed to pass over it, but if this delay is not possible, the rubber blocks can be grouted into position with pitch or bitumen. This latter method was adopted in both Edinburgh and Glasgow. If the concrete foundation is quite dry, then the blocks should be laid with bitumen and grouted in with pitch or bitumen. The top surface of the blocks laid in Edinburgh and Glasgow contains 30 per cent of plantation rubber—no reclaim.

Early Experiments Inconclusive

Large slabs of rubber were laid a good many years ago at the entrance to both St. Pancras and Euston stations, London, and elsewhere, though, as these were under cover, the results obtained are not of very great use when considering ordinary road work. Although the rubber pavement in Princes street, Edinburgh, was down for over twenty years, and each year it must have been walked upon by many millions of people, it was found to have lost only a fraction of an inch in thickness during this period.

SIXTH INTERNATIONAL RUBBER AND TROPICAL PRODUCTS EXHIBITION

Under the patronage of the king of the Belgians the sixth international exhibition of rubber, other tropical products, and allied industries will be held in Brussels, Belgium, April 1 to 16, 1924. Important sections are being organized by the following exhibitors:

Ministry of Colonies, Brussels, and Belgian Congo Companies; Federal Government of Brazil; French Colonies and Protectorates; Government of Mexico; all the Netherland East Indies experimental stations; Rubber Growers' Association; Ceylon; Malaya; Egypt; Ministry of Colonies, Lisbon; British, French and Belgian manufacturers, etc.

Papers are to be read in English and in French, the subjects to be considered coming under the following main divisions: Rubber, Cotton and Other Fibers; Vegetable Oils and Allied Industries. International conferences will be held in the conference rooms of the exhibition, under the joint-chairmanship of Prof. Wyndham R. Dunstan, Director of the Imperial Institute, London, and Prof. Edmond Leplae, Director-General of Colonial Agriculture, Ministry of Colonies, Brussels.

Jelutong or Pontianak

B. J. Eaton and J. H. Dennett publish in the *Malayan Agricultural Journal* for July, August and September, 1923, results of analyses of jelutong recently made in their laboratories. The samples investigated comprised jelutong latex, crude jelutong prepared by Chinese, crude jelutong prepared by native methods, and so-called purified jelutong.

Jelutong latex is a white emulsion similar in appearance to Hevea latex. It can be coagulated with acetic acid, or alum and also anaerobically. Chinese jelutong is a compact coagulum; native jelutong has a honeycomb structure, and the sample was sticky and discolored. Purified jelutong is of a greyish-white color and gummy in character.

The results of analyses follow:

	Jelutong latex	Fresh Jelutong from latex	Chinese Jelutong		Native Jelutong		Purified Jelutong	
			Fresh	Dry	Fresh	Dry	Fresh	Dry
	%	%	%		%		%	
Total solids.	18.2	24.5	52.9	...	82.3	...	82.1	...
Moisture ...	...	75.5	47.1	...	17.7	...	17.9	...
Ash	...	...	0.05	...	trace	...	0.36	...
Resin	...	79.0	42.2	80.5	67.3	80.9	62.3	75.9
Rubber .... by difference	...	21.0	10.7	19.5	15.0	19.1	19.4	24.1

The figures for resin and rubber content in fresh jelutong from latex represent resin ex-rubber content calculated on the dry coagulum.

The authors give an extract from a translation of *De Nuttige Planten van Nederlandsch-India* by K. Heyne, published in 1917, which supplies further data on the subject. According to this, the jelutongs are scattered trees of enormous size, some of the tallest of which attain a height of over 150 feet and have a circumference of 24½ feet. The Dyaks in Borneo distinguish three varieties, the white and black growing in swamp lands and the red growing in the hills. The tree belongs to the genus Dyera. In Malaya there are two varieties, one with red, the other with whitish bark, and the former is said to yield more latex than the latter.

The method of tapping in Borneo consists of four to six cuts, as broad as a hand, made around the tree right up to the wood and 4½ feet from the ground. Eight days later the wounds are enlarged to about three fingers' breadth, with a parang, but are not allowed to touch each other. Tapping is continued down to the ground and higher up the tree as far as the parang will reach. The first exudation of watery liquid is discarded, but after about five minutes a thick milk appears, which is collected. A large tree is said to yield ½ picul of latex. Trees of medium size can be tapped for about a year.

At one time trees in Malaya, Sarawak, and Borneo were exploited under European control, chiefly by the United Malaysian Co. and two subsidiaries, all since defunct. They adopted the V-method of tapping and results were at first favorable, but due to lack of supervision trees were killed by over-tapping. At present no systematic method of tapping is followed, although at least one European is collecting jelutong in Pahang and Kelantan.

As for preparation, the collector adds about one-third water to the latex to prevent fermentation and coagulation. The latex is then poured into a basin, diluted with three parts of water and ⅛ bottle of paraffin, and a little ground *obat pantung* is added. The mixture is stirred for about 2 hours and left till the next day, by which time it has coagulated.

The excess water is poured off and the coagulum repeatedly treated with hot water and rolled with a bottle. A block weighing 23-30 catties is prepared and kept in a stream, as it is said jelutong which is not kept under water deteriorates rapidly. Jelutong thus obtained is said to weigh three times as much as the juice collected, owing to absorption of water.

Palembang has the reputation for the highest rubber content, 15-18 per cent. Banjermassin jelutong contains 12.14 per cent of rubber.

Engineering Problems in Rubber Footwear Mill Rooms[1]

By Alfred B. Lingley, B.S., Ch.E.

The writer's object has been to lay out an ideal mill room for a rubber footwear factory which will produce sufficient stock for a ticket of 25,000 pairs per day, partly light and partly heavy footwear, operating only in the daytime.

Following considerable introductory matter well known to the trade and devoted chiefly to the ideal rubber factory location with reference to sources of crude materials, transportation, labor, water and taxes, the writer describes his conception of the ideal type of factory in substance as follows.—The Editor.

The Factory and Mill Room

THE factory is two stories high, of reinforced concrete with steel girders where necessary. The roof is of saw-tooth construction, admitting plenty of light to the upper floor. The floor plan is of the "T" type with the receiving room located at the end and the ells running from it. The windows are the all-glass mill construction type.

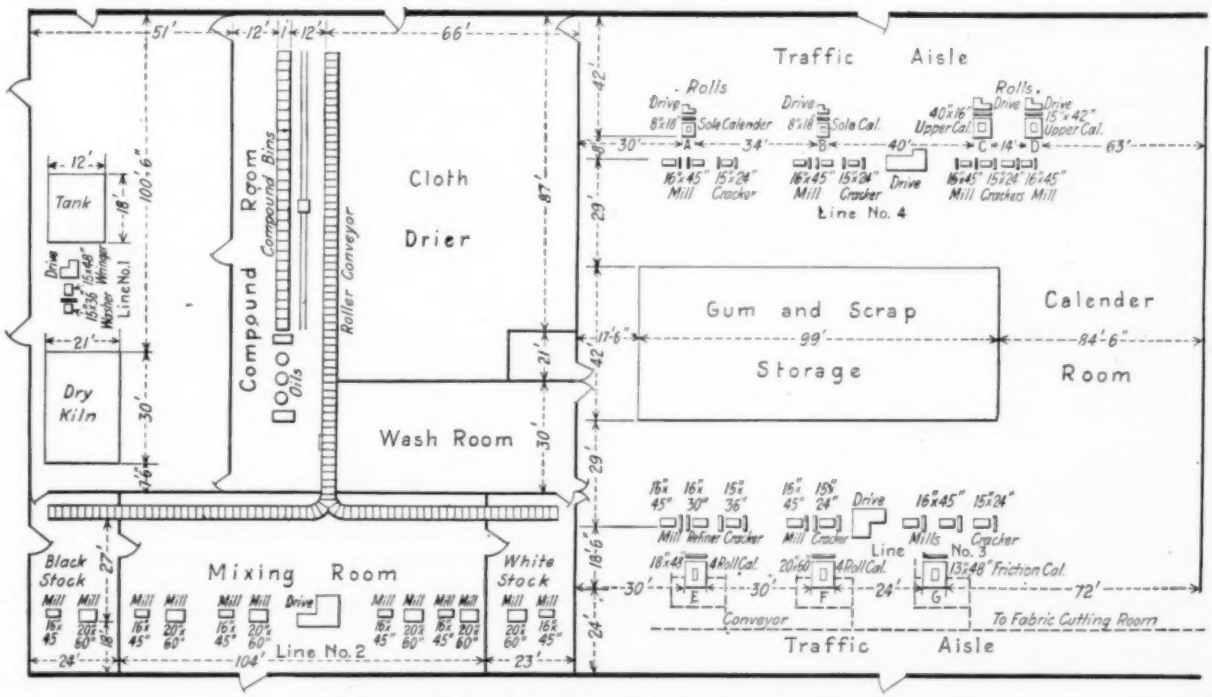
Mill Room

The lay-out of the mill room indicates that the gum calenders and fabric calenders are grouped in separate "trains." The stock from the calenders is conveyed by aprons to the cutting room on the second floor. Stock from the fabric calenders is delivered by a mono-rail conveyor to the fabric cutting room located on the same floor with the mill room at the end of the ell. The mill compound and mixing rooms should have adequate light and air for sanitation and efficiency. These rooms are therefore but one story in height with a sawtooth roof, the windows of which open as desired.

As the bulk of the crude materials are for mill-room consumption the receiving room is situated in that portion of the building at right angles to the ells. This places the receiving room adjacent to the mill room and at a convenient distance from all other departments.

The mill room is on the ground floor, as rubber mill machinery is heavy, requiring a very solid foundation. Pits or tunnels must be made beneath the machinery to allow for the line shafting, repairing the machinery, and piping steam and water to the machinery. The floor is of wooden blocks with a foundation of concrete. In the mixing room, the 60-inch mills are supplied with hoods and suction fans to care for the dust. Two hoods are located in front of the compound bins for the same purpose.

Provision is made for a wash room, an office for the department foreman, and the general office. Part of the remaining space may be occupied by the cloth drier, and the unused area reserved for future needs.



Typical Layout of a Modern Footwear Mill and Calender Room

[1] Thesis submitted as partial requirement for the degree of Chemical Engineer, College of Technology, University of Maine, Orono, June, 1923.

Specifications for Required Machinery

1—150 H. P.—A. C. Motor, for Line No. 1.
1—450 H. P.—A. C. Motor, for Line No. 2.
1—300 H. P.—A. C. Motor, for Line No. 3.
1—350 H. P.—A. C. Motor, for Line No. 4.
2—20 H. P.—D. C. Motors, for sole calenders "A" and "B".
1—35 H. P.—A. C. Motor, for pressed upper calender "D".
1—35 H. P.—D. C. Motor, for plain sheet calender "C".
1—50 H. P.—D. C. Motor, for friction calender "G".
1—75 H. P.—D. C. Motor, for lining calender "F".
1—75 H. P.—D. C. Motor, for rag calender "E".
2—A. C. Motors for 6 fans. Makers specifications.
1—15 by 36-inch Washer. Both rolls corrugated.
1—15 by 48-inch Wringer. Both rolls corrugated.
6—20 and 22 by 60-inch Mills.
16—16 by 45-inch Mills.
4—15 by 24-inch Crackers. Fast roll corrugated.
1—15 by 36-inch Cracker. Fast roll corrugated.
1—16 by 36-inch Refining Mill.
2—8 by 18-inch, 4-Roll Sole Calender.
1—40 by 16-inch, 3-Roll Upper Calender.
1—15 by 42-inch, 4-Roll Upper Calender.
1—18 by 48-inch, 4-Roll Calender.
1—20 by 60-inch, 4-Roll Calender.
1—13 by 48-inch, 3-Roll Calender.
3-100-Pound, Clock Face Scales, Graded to 1/10-pound.
2—10-Pound, Balance Scales.

Rolls of all calenders, mills and crackers are chilled cast iron. It is impossible to specify the crown for the rolls of the fabric calenders, as this will depend on the amount of heat required to calender the stock. The top roll of the 13 by 48-inch calender should be crowned about .002. The two upper rolls of the 18 by 48-inch and 20 by 60-inch calenders will not require as much crown.

The 13 by 48-inch calender is geared for a 2:1 ratio, with the middle roll as the fast roll. The 18 by 48-inch and 20 by 60-inch calenders are equipped with herring-bone gears for even motion and spur gears for a 2:1 ratio, with the middle roll as the fast roll. In the latter case, the top roll will run idle.

Rubber Washing

Provision is made for washing wild rubbers as well as all rubber for upper stocks if desired. Rubber is placed in a water-tight tank, 18 by 12 by 3 feet. The tank may be of heavy, wooden construction, lined with zinc or coated with tar. A water inlet and outlet are provided, the outlet screened to prevent foreign matter from lodging in the pipe. The water is heated by live steam, passing through a 1-inch perforated pipe along the bottom of the tank.

Line No. 1

Line No. 1 is driven by a 150 h. p. a. c. motor, reduction gears enclosed in oil-tight casings. This motor will carry the required load, and another washer or wringer may be added to the line without difficulty. On this line are located a 15 by 48-inch washer, and a 15 by 36-inch wringer or sheeter.

Both rolls of the washer are corrugated. The front roll travels 10 r. p. m., while the speed of the back roll is 14.6 r. p. m. The surface speeds of the front and back rolls will be 471.3-inches per minute and 688 inches per minute, respectively. The surface speed ratio will be:

$$\frac{\text{Speed of front roll}}{\text{Speed of back roll}} = \frac{3}{4} \text{ (approximately).}$$

Such a ratio will produce the desired result of tearing the rubber apart, exposing its whole area to the action of the water.

The wringer is also equipped with two corrugated rolls. The front and back rolls travel 10 r. p. m. and 20 r. p. m. respectively. The surface speed of the slow roll is 471.3 inches per minute while that of the fast roll is 942.6 inches per minute. The surface speed ratio will be:

$$\frac{\text{Speed of front roll}}{\text{Speed of back roll}} = \frac{1}{2}.$$

This ratio allows the washed rubber to be formed into a thin, smooth sheet. A perforated pipe is so placed over each machine that water will be sprayed over the rubber while on the machine.

A dry kiln 30 by 21 by 8 feet is located a short distance from the washer and wringer. Such a kiln has a capacity of 10,000 pounds of rubber per 48 hours, and 60,000 pounds of washed rubber per week. The dry kiln method is better than the dry room because it affords quicker and more uniform drying. In a dry kiln, the rubber is dried at a temperature of 150 degrees to 160 degrees F., while in a dry room the temperature is 110 to 115 degrees F. A "heat" in a dry kiln is completed in 48 hours, while a dry room requires four or five days. The humidity of a dry kiln is so controlled that the air is moist. This insures more uniform drying of the rubber.

Compound Room

The compound room is one of the most important in the entire factory, as errors in weighing cause serious trouble. Hence, the need of very rigid control of this department.

On the second floor the ingredients are loaded into hoppers leading to the bins in the compound room, the number of bins depending on the types of compounds used. Twenty or thirty bins should be sufficient for the factory under consideration. The bins extend from the ceiling of the compound room to within 4 feet of the floor facing the movable compound scale, and are closed by covers which slide up or down. The bins are 20 by 40 inches, and the pipes conducting the ingredients to the bins are one foot in diameter. The pitch of the pipes should not be less than 45 degrees.

The required ingredients are ordered from the receiving room. A drier, large enough to hold at least a day's supply of powders, is located in the receiving room. This means that before the ingredients are dumped into the bins they have been dried for at least twenty-four hours.

It is desirable to eliminate all foreign substances such as wood in upper stocks. This may be done either by sifting the ingredients before placing in the bins or by refining the mixed stock before sending it to the calenders.

Ingredients are taken from the bins in scoops and weighed on a movable scale. This is mounted on four wheels and travels on a double track running the length of the compound bins. From the scale, the powder is placed in strongly constructed sheet iron pans. The pans are placed on the roller conveyor running parallel to the sliding scale. Each compound has a number and the pan is tagged accordingly.

It is good practice to have a standard weight for batches. On 60-inch mills no difficulty will be experienced in mixing two-hundred-pound batches of shoe stock. It is not advisable to mix larger batches on 60-inch mills as insufficient mixing is likely to result. Sulphur and organic accelerators are weighed and placed in round tin containers about 9 inches in diameter and 6 inches high, which are placed on top of the pan of ingredients weighed from the bins.

Oils in metal containers, equipped with large size faucets, are heated by steam to remove moisture and to cause it to flow freely. Drums of oil are emptied into the containers by means of a traveling crane. Oils may be handled in two ways—either by pouring into the pan of ingredients or by placing in a separate tin. The first method is preferable if the oil is thoroughly stirred into the ingredients when placed in the pan.

The pan of compound with the buckets of sulphur and accelerator on top are moved along the roller conveyor to the scale where the rubber and shoddy are weighed and placed on top of the pan which is now moved by roller conveyor on to the scale. Here the weight of the batch is checked. The sulphur and accelerators are checked on a small scale. In checking the weights of the batch no tolerance should be allowed for under weight. An allowance of two pounds over may be permitted for the total batch. This is one per cent of the batch weight. Sulphur and accelerators should receive a tolerance of one-half ounce over weight. This would average about one-half of one per cent.

The Mixing Room

The mixing room has a line of mills indicated as Line No. 2. This consists of six 20 and 22 by 60-inch mills and six 16 by 45-inch mills. The line is driven by a 450 h. p. a. c. motor. Mixing is done on the 60-inch mills while the rubber and shoddies are "broken" and blended on the 45-inch mills. The use of the 45-inch mills means an enormous saving of mixing time on the 60-inch mills.

In fixing the speeds of the mills, two factors must be considered. The rolls should not travel at such a high speed as to prove hazardous to the operator. On the other hand, should the rolls travel too slowly, too much time will be required in sheeting out the mix from the mill.

The other factor to consider is the friction ratio between the rolls. Obviously, the heat generated will vary directly with the friction between the rolls. Too much friction is undesirable as there will be a tendency to burn the batch or toughen it. With this in mind, it is believed that the front roll should travel 11 r. p. m. and the back roll 17 r. p. m. The surface speeds of the front and back rolls will be 764 inches per minute and 1,075 inches per minute, respectively. The surface speed ratio will then be: Speed of front roll: speed of back roll = 2.3.

Considering the small mills, the front roll will be driven 12 r. p. m. and the back roll 21 r. p. m. The respective peripheral speeds of the rolls will be 606 inches per minute and 1,060 inches per minute. The surface speed ratio will then be: Speed of front roll : speed of back roll = 3.5. This line will be driven by a 450 h. p. a. c. motor. The reduction gears are enclosed in an oil-tight casing.

Reference to the lay-out plan will show that certain mills are in a separate compartment for mixing black stock, while other mills are in a separate room at the other end of the line for mixing white stocks. A mill must be set aside for white stocks exclusively to derive good results. The ideal plan is to have a mill for black and a mill for white. Isolate the two mills by means of partitions, entrance being by means of a sliding door, which is kept closed. It is good practice to use lampblack and carbon black which have been pressed.

There is an aisle about 26 feet wide extending the length of the room between the mills and the roller conveyor. This allows adequate space for setting the pans of rubber and ingredients as well as space for the cooling racks. These are 6 by 6 by 6 feet, constructed with a heavy steel frame. The frame supports a series of movable shelves of heavy mesh wire, 8 inches apart. The racks are mounted on wheels so that they may be moved as desired.

The stock is cut from the mixers in sheets about 2 feet long and rolled twice, making a slab about 1 by 2 feet. These are placed on the movable shelves. The loaded rack is then taken to the space for gum and scrap storage. This system eliminates the use of wrappers or whiting in the mixing room. A much cleaner room will result as well as a saving in labor, due to stock sticking when piled with whiting or wrappers. Opinions are divided as to the use of aprons on mixing mills, the chief objection being the tendency to hold ingredients. The great advantage of using aprons is the amount of labor which is saved. By the use of an apron on a 60-inch mill, one operator can mix a 200-pound batch without difficulty. To do the same without an apron, two operators per mill are required. It is good practice to "break" the rubber and allow it to age forty-eight hours before mixing. Mills not required for mixing may be used for this purpose.

Stock Storage

In the center of the calender room there is a space 99 by 42 feet set aside for gum and scrap storage. Gum from the mixing room is brought here. Scrap from the gum cutting department is returned to this area. The calender men order the required stock from the man in charge. Standard batches of the required stock are weighed on trucks and sent out. This area is located in a central position with reference to all calenders. Efficient delivery of stock to the calenders is highly essential. Calender delays due to lack of stock represent a loss of money, both in labor and machine time.

A standard weight batch is decided upon with a definite proportion of gum and scrap. This is important if a shoe of uniform quality is desired. All stocks are properly marked to avoid confusing stocks of the same color.

The Calender Room

The gum calenders are in a train on one side of the room while the fabric calenders are on the opposite side. Stock from the gum calenders is delivered upstairs to the gum cutting department by apron. This saves trucking and serves to cool and shrink the stock before placing it on frames or boards. The finished stock from the fabric calenders is delivered to the fabric cutting room on the same floor by means of a monorail overhead conveyor. The calenders are so located with reference to the mills that a mill man may "feed" the calender, eliminating the necessity of paying a man solely for feeding a calender.

Driving line No. 3 and line No. 4 are each driven by one motor, and all calenders are individually driven. The motor drives on the fabric calenders are mounted on top of the calenders, conserving space.

Gum Calenders

There are four gum calenders, A, B, C, and D. The first two are 8 by 18-inch four-roll sole calenders. C is a 16 by 40-inch four-roll upper calender. D is a 15 by 42-inch four-roll upper calender.

Both sole calenders are individually driven with 20-horsepower, direct current motors, allowing variable speed. The minimum speed will be 7 yards, while the maximum will be 14 yards per minute. The sole calenders are of the ordinary four-roll type, the three plain rolls placed over each other with the engraved roll set in front of the top roll. The aprons are driven by sprockets from the calenders, and provided with cone pulleys to adapt the speed of the apron to the stock used. Engraved rolls are stored on racks between the drives of the two calenders. Both machines are driven by reduction gears enclosed in oil-tight casings.

Upper calender C is driven by a 35-horse-power, direct-current motor, running variable speed. The minimum speed will be 7 yards while the maximum will be 14 yards per minute. This calender is intended primarily for running the upper stock for boots. It will not be necessary to adjust the speed of the apron on this calender, as shrinkage need not be considered. The apron will travel about one per cent faster than the peripheral speed of the face roll of the calender. This will help to overcome any tendency of the stock to adhere to the face roll. As previously stated, C is a 16 by 40-inch four-roll calender. The rolls are placed in the same manner as the sole calenders.

D is a 15 by 42-inch four-roll upper calender, driven by a 35-h. p.-a. c. motor. This calender will run at a constant speed of 10 yards per minute. This calender is intended for running uppers for light gum shoes. It will be unnecessary to vary the relative speeds of the apron and calender. The apron will travel about one per cent faster than the face roll of the calender. The stock will travel on top of the apron, which will be driven by sprockets and chain. The "banking" between the top roll and face roll will be carried up from the calender and dropped to the floor by means of a small apron driven by sprockets.

It will be noted that both soling and uppers will be carried on top of the apron which is driven by sprockets and chain. It is possible to carry the stock on the upper side of the apron and eliminate sprockets. This may be done by placing a pressure roll in front of the face roll. Such a roll drives the apron and presses the stock to the apron. The latter function of the pres-

sure roll is detrimental to the quality of the stock, especially to the soling and the pressed upper stock. Provision is made for storing the engraved upper rolls, as shown in the layout. A traveling crane runs from the roll rack to the calender D.

Line No. 4

Line No. 4 will be driven by a 350-h. p.-a. c. motor, reduction gears enclosed in an oil-tight casing. The mills and crackers will have the same speeds as the 16 by 45-inch mills on No. 2 line—18 r. p. m. for the first roll and 21 r. p. m. for the back roll. In each case the slow roll will be on the side adjacent to the gum calenders. The feeds for the calenders will be taken from the slow rolls. The crackers will be fed from the fast side as the gum and scrap will be brought to this side of the machine.

On line No. 4 there are six 16 by 45-inch mills and four 15 by 24-inch crackers. Sole calender A is fed by two 16 by 45-inch mills and a 15 by 24-inch cracker. Sole calender B is fed by two 16 by 45-inch mills and a 15 by 24-inch cracker. The 40 by 16-inch upper calender C is fed by a 16 by 45-inch mill and a 15 by 24-inch cracker; the 15 by 42-inch upper calender D is fed by a 16 by 45-inch mill and a 15 by 24-inch cracker.

Fabric Calenders

There are three fabric calenders, E, F, and G. The first two are four-roll calenders, while the latter is a three-roll, and all are individually driven. E is an 18 by 48-inch calender for running rag stock. It is driven by a 75-h. p.-d. c. motor and equipped with gears for both even and friction motion. The minimum speed is 8 yards, while the maximum will be 20 yards per minute. It is not possible to produce rag stock of good quality at a speed greater than 10 yards per minute. In running friction the calender may be operated at the maximum speed of 20 yards per minute. The calender is run with a rolling "bank" between the two middle rolls. If friction is run on the calender, the top roll is allowed to travel idle.

F is a 20 by 60-inch calender used for linings. It is driven by a 75-h. p.-d. c. motor. As with E, gears for both even and friction motion will be provided. The calender travels at a minimum speed of 7 yards and at maximum of 20 yards per minute. Linings will be run at a maximum speed of 12 yards per minute. The fourth roll is adopted for its refining action and because of the uniformity which the stock will have. The calender will run with a "banking" between the middle rolls. If friction is run on the calender the maximum speed may be used.

G is a 13 by 48-inch friction calender driven by a 50-h. p-d. c. motor. The minimum speed is 17 yards and the maximum is 20 yards per minute. This calender is used for friction only, the ratio being 2 to 1. The friction gears on E and F are the same ratio. By using a well milled soft friction gum no difficulty will be experienced in operating with this ratio. Dotted lines indicate overhead monorail conveyors which circle each calender and continue from the calenders to the fabric cutting room on the same floor. Two tracks run to the cutting room, one to deliver the stock, the other to return empty cranes.

Line No. 3

This line is driven by a 300-h.p.-a. c. motor, reduction gears enclosed in oil-tight casings. The front rolls of the crackers and mills travel at 18 r. p. m., while the back rolls have a speed of 21 r. p. m. The front roll of the 16 by 30-inch refining mill has a speed of 18 r. p. m., while the back roll will travel at 30 r. p. m. The slow rolls are on the side adjacent to the fabric calenders. The feeds for the calenders will be taken from the slow rolls. The crackers are fed from the fast side as the gum and scrap will be brought to this side of the machine.

On line No. 3 there are four 16 by 45-inch mills, one 16 by 30-inch refining mill, one 15 by 36-inch cracker and two 15 by 24-inch crackers. Rag calender E is fed by a 16 by 45-inch mill, a 16 by 30-inch refining mill, and a 15 by 36-inch cracker. Lining calender F is fed by a 16 by 45-inch mill and a 15 by 24-inch cracker. Friction calender G is fed by two 16 by 45-inch mills and a 15 by 24-inch cracker.

The Unit System

In the layout shown on the title page Lines No. 3 and 4 are driven by separate motors. If the unit system is adopted, in Line No. 4 the 350-h. p.-a. c. motor will be replaced by two 100-h. p-a. c. motors and one 150-h. p.-a. c. motor. The machines feeding sole calender A will be driven by a 100-h.p.-a. c. motor. The machines feeding sole calender B will be driven by a 100-h. p-a. c. motor. Machines feeding the two upper calenders, C and D, will be driven by a 150-h. p.-a. c. motor.

In Line No. 3 the 300-h. p.-a. c. motor will be replaced by two 100-h. p.-a. c. motors and one 75-h. p.-a. c. motor. The machines feeding calender E will be driven by a 100-h. p-a. c. motor. The machines feeding calender F will be driven by a 75-h. p.-a. c. motor. The machines feeding calender G will be driven by a 100-h. p-a. c. motor.

STATEMENT OF THE INDIA RUBBER WORLD

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of THE INDIA RUBBER WORLD, published monthly at New York, N. Y., for October 1, 1923.

State of New York, } ss.:
County of New York }

Before me, a notary public in and for the State and county aforesaid, personally appeared E. M. Hoag, who, having been duly sworn according to law, deposes and says that she is the business manager of THE INDIA RUBBER WORLD, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher, The India Rubber Publishing Co., 25 West Forty-fifth Street, New York, City.

Editor, Henry C. Pearson, 25 West Forty-fifth Street, New York City.

Managing editor, Henry C. Pearson, 25 West Forty-fifth Street, New York City.

Business manager, E. M. Hoag, 25 West Forty-fifth Street, New York City.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.)

The India Rubber Publishing Co., 25 West Forty-fifth Street, New York City.

Henry C. Pearson, 25 West Forty-fifth Street, New York City.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

E. M. Hoag, Business Manager.

Sworn to and subscribed before me this 19th day of September, 1923.

[SEAL] WALTER A. LAWLOR, Notary Public,
(My commission expires March 30, 1925.)

MODIFIED ETHYLIDENE ANILINE

A modification of ethylidene aniline in powder form, now available under the trade designation A-19, affords the compounder several important advantages, among which are the following: No master batches are required; the material melts on the mill and is thoroughly incorporated without the least scorching effect. In vulcanizing the accelerating cost is low and because of the long flat curing curve a valuable margin of safety is provided which insures uniform cure throughout the thickest objects. Aging tests show that stocks properly compounded and cured with modified powdered ethylidene aniline have better aging characteristics under like conditions than any other accelerator.

Die Cast Golf Ball Molds[1]

Advantages and Disadvantages of Steel Molds—Die Casting Process and Applications—Making Die Cast Golf Ball Molds

THE story of how golf balls are made has been told in these columns.[2] It made clear the details of ball center construction, and formation of the gutta percha shells subsequently applied under pressure by a molding operation.

The present article describes a new and interesting method of making golf ball molds by die casting. This development has been perfected and used for more than a year and the marked advantages of the molds fully demonstrated.

Steel Molds

Golf ball centers are usually covered with gutta percha or balata in special steel molds. Their manufacture necessitates special tools and specialized training and skill on the part of the workmen who finish the cavities by hand methods. Each mold cavity is die sunk or cut from a solid block of special quality steel. The raised spots on the mold cavity that produce the dimpled markings on the surface of the ball are most accurately located and cut in relief by special die sinking tools. The bottom of the cavity is bored to receive a plug with surface concaved to the same radius as the ball cavity, and bearing in raised characters the name of the ball. This feature requires exceptionally careful work. When completely cut, and engraved, the cavity is hand scraped and polished free of tool marks and undergoes heat treatment to prevent rusting. Such a steel mold is permanent and accurate and a marvel of the art of die sinking.

The process of making it is slow and expensive. The high cost naturally restricts ball manufacturers' investment in such equipment, and discourages changes in design of markings and production of special types.

Balls molded in a die sunk steel mold of the sort described are remarkable for perfection. However, the growing popularity of golf is increasing the demand for balls and emphasizing the need of enlarged mold equipment. The solution of the problem of excessive cost without loss of the accuracy and perfection of the steel golf ball was found in the process and application of die casting.

Die Casting Process and Applications

Die casting is the process of making castings from non-ferrous alloys by injecting the very hot fluid metal under high pressure into heavy steel dies provided with an internal water circulating system for rapidly cooling the casting. The main features of this process were described in a recent article[3] published in this journal.

Die casting has become a very important division of the non-ferrous metal trade because of the accuracy and low cost at which castings however complicated can be produced. Its main applications are in the automotive industries for starting, lighting, and ignition parts and accessories of all kinds, for parts of vacuum cleaners, household utilities, cutlery, sporting goods, electrical devices, radio apparatus, textile machinery, talking machines, musical and surgical instruments, office appliances, frames and parts for typewriters and adding machines, molds for golf balls, rubber dolls, balls, toys, etc. For parts not used electrically die castings are displacing hard rubber and phenolic resin products.

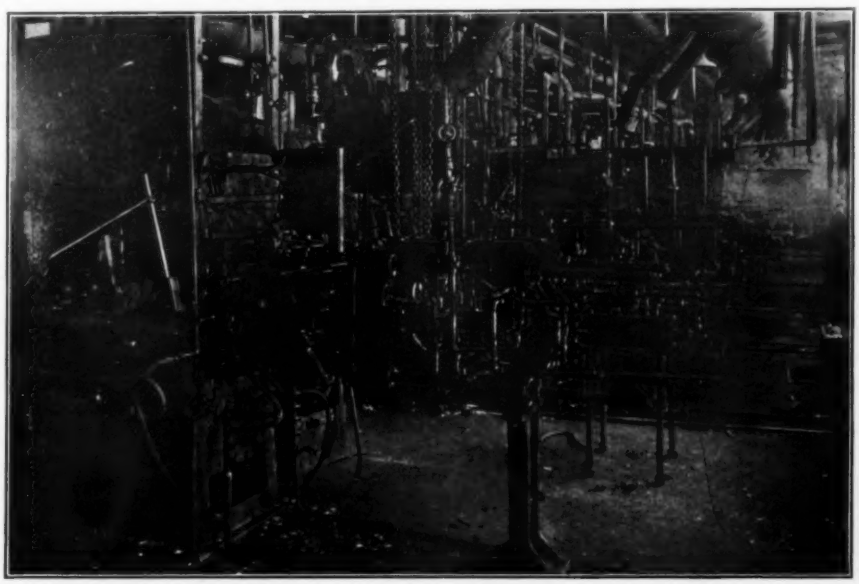


Fig. 1.—Die Casting Machine

The preliminary stages of die casting are: fusion of the alloyed metals in the casting furnace and transference of the fluid metal to the reservoir of the casting machine.

The casting machine illustrated in Figure 1 is automatic. It comprises a heavy frame and track supporting a movable carriage for the mold or die, which is made to advance toward the casting furnace by hydraulic power when a casting is to be made. In this position the inlet of the die receives the outlet of the gooseneck of the furnace, thus establishing a tight pipe connection between the die and a point well below the surface of the molten metal supply in the casting furnace. The injection of the fluid metal into the die is effected by a system of compressed air connected at the furnace.

Die for Casting Golf Ball Molds

The die used for casting golf balls is of the same type as that for die casting in general. It is separable, built of steel, and contains a copper pipe system for internal circulation of water for cooling the casting. It has also an air outlet. In the case of golf balls several cores are mounted in the die and the cavities

[1] Data and illustrations furnished by The Doebler Die Casting Co., Brooklyn, N. Y.

[2] "Golf Ball Manufacture." THE INDIA RUBBER WORLD, October 1, 1921, 21-23.

[3] "Die Casting Rubber Molds." September 1, 1923, 767-8.

assembled in gates to make several molds at one casting. Later these are assembled as in Figure 2.

The Core

Each half of a die cast ball mold is of the same pattern. The core shown in Figure 3 is an accurate duplicate in size, design, and finish of the ball required. Being positive it can be easily produced in metal by an ordinarily skillful tool maker using regular tools and standard machine shop methods. The markings or dimples as well as the lettering can be laid out and cut into the

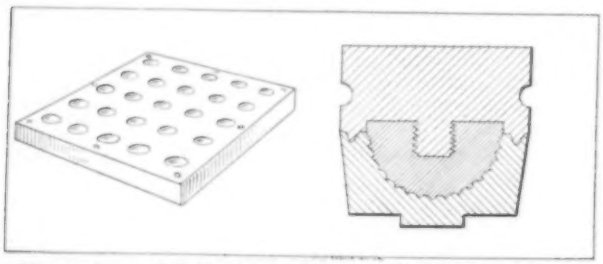


Fig. 2—Grouped Ball Cavities Fig. 3—Golf Ball Core in Cavity

conveniently accessible surface of the core and which can be finished and polished with the utmost degree of accuracy while threaded to a trued steel piece that serves to hold it in place in the cavity of the steel die casting mold.

Casting Operation

Large objects are cast singly. Small ones are gated together in the same die. The metal in the casting furnace is maintained from 1,200 to 1,500 degrees F. and is very fluid. The die closed and tightly clamped is advanced by the carriage, and automatically makes a tight connection as the outlet of the gooseneck enters the die inlet. Then the air system of the furnace is turned on and the fluid metal is shot into the die under 400 pounds pressure per square inch. The casting being made under pressure is highly compacted in the die and instantly cooled, without inclusion of bubbles, by the water circulation of the die. The carriage is promptly drawn back from the furnace, the die opened automatically and the casting removed.

Cast golf ball molds with contained metal cores, as illustrated in Figure 3, are removed from the mold and new cores are sub-

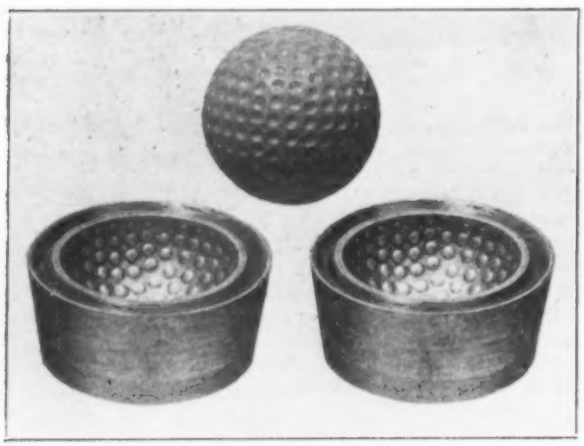


Fig. 4—Die Cast Golf Ball Molds and Ball

stituted for each succeeding casting. A pair of die cast mold cavities with the ball they produce are shown in Figure 4.

Mechanical conditions necessitate a new core for each golf ball cast, but this fact is not important as the total item of mold cost is trifling in comparison with that of the usual steel mold.

Die cast molds require no finishing whatever but are ready to be drilled and tapped on the base for attachment in suitable grouping in a steel chase for use in the hydraulic molding press.

Advantages of Die Cast Molds

Die cast golf ball molds have the same accuracy of dimensions, markings, perfection of polished surfaces, and durability in service as steel molds, with the added advantages that they can be made at a fraction of their cost admitting a more generous mold equipment and increased output for the ball manufacturer.

The ease of making the duplicate, accurate, positive cores readily permits changes in design of markings or names when desired without occasioning prohibitive cost. The balls produced from die cast molds have a glass-like surface and are free from disfiguring mold seams where lettered.

Die casting marks a notable advance in rapid production of golf ball molds without sacrificing accuracy, finish, or serviceability with the added advantages of flexibility in design and greatly decreased equipment cost. It unquestionably is destined to wider recognition in the molded plastics industries.

NEW YORK AUTOMOBILE SHOW

New York City's annual automobile show, usually held in the Grand Central Palace, will this year be housed in the 258th Field Artillery Armory, 29 West Kingsbridge Road, the Bronx. The new quarters are more than three times the size of Madison Square Garden, and measure 300 by 600 feet. Ample space is thus provided for all exhibits, and all the cars to be displayed and about half of the accessories will be on the main floor, the remaining accessories to be placed on the balcony.

Many automobile companies have already secured advantageous spaces for their exhibits, and plans are being made to make the 1924 shows a success in every way possible.

PRESIDENT CONFERS WITH N. A. C. C. DELEGATION

An advisory committee of the National Automobile Chamber of Commerce recently conferred with President Coolidge regarding a fuller cooperation of the industry with government departments. The development of highways was discussed, as well as the work of the Bureau of Public Roads, while tentative plans for the holding of a Pan-American transport congress were endorsed. Among those participating in the discussions was W. O. Rutherford, president of the Rubber Association, and also president of the Motor and Accessory Manufacturers' Association, and vice president of The B. F. Goodrich Co., Akron, Ohio.

RUBBER SECTION, N. S. C., ELECTS OFFICERS

At the meeting of the Twelfth Annual Safety Congress of the National Safety Council, 168 North Michigan avenue, Chicago, Illinois, held at Buffalo, New York, October 1-5, the following officers of the Rubber Section were elected: Chairman, C. F. Horan, Hood Rubber Co., Watertown, Massachusetts; vice-chairman, E. L. Hewitt, United States Rubber Co., New Haven, Connecticut; secretary, C. T. Wilson, Kelly-Springfield Tire Co., Cumberland, Maryland.

ANNUAL CONVENTION OF N. T. D. A.

The coming annual convention of the National Tire Dealers' Association promises to be of unusual interest, as certain problems in connection with sales methods at present confronting the industry are to be discussed. The convention will be held at the Hotel Pennsylvania, New York, N. Y., on November 13-14-15.

Among the matters to be considered at this meeting will be the proposed elimination of the suggested consumer's price list, the problem of spring dating, methods of handling national business accounts, etc. All tire dealers of the country, whether members of the National Tire Dealers' Association or not, are urged to attend.

Hard Rubber Ear Caps[1]

Hard Rubber Preferable—Mechanical and Electrical Properties—Receiver Construction—Dust Pressed Molding Method

THE phenomenal popularity of radio has enormously increased the demand for molded parts necessary in the construction of a receiving set. Manufacturers of hard rubber and molders of phenolic resin products are in the radio field with rival claims for their respective materials, both of which are extensively employed in making the following instrument parts: panels, transformer plates, tubes for couplers, stators and rotors, coil mountings, knobs, dials, condenser bases, sockets, insulators, etc.

The manufacturing processes for making molded articles in hot and cold plastics and hard rubber, and the comparative mechanical and dielectric qualities of each have been given in articles published within the past two years in THE INDIA RUBBER WORLD.[2]

Hard Rubber and Phenolic Resins in Radio

Hot molded phenolic resin products enter largely into the production of radio sets as panels and other parts, beside their use as in distributor, ignition and other devices and in the automotive field. In fact, without these materials development in these industries would have been seriously hampered. Molded phenolic resin ear caps, although common, lack the desirable qualities possessed by hard rubber.

The two types of material, therefore, should not be classified together as substitutes for each other in all applications. In the radio field this applies with peculiar force to panels and ear caps. These are two examples where hard rubber is superior from the standpoint of suitability, both mechanically and electrically.

Head Telephone Receiver Sets

The telephone head set is one of the most important parts of a radio receiving set. It must be made as sensitive as possible because of the extremely minute current with which it is operated. Hard rubber has proved the most satisfactory material of which to make telephone receiver ear caps because it admits of molding with the extreme accuracy necessary, while other materials do not. Therefore, it is always used for ear caps in the highest type of head sets, such as that illustrated in Figure 1.

Fig. 1. Navy Type Telephone Head Set

The head receiver sets may be of either one or two receiver units, the one in general use being known as the "watch case" receiver type. These receivers are so designed and constructed that a pair may be attached to a metal head piece which is fashioned to fit over the head, having one receiver on either end and held against the ears of the listener by the spring tension of the head piece. In the same manner one receiver may be attached to the head piece.

The Telephone Receiver

The mechanical makeup of the receiver consists of the container unit, that is, the receiver case and receiver cap, made of hard rubber, and the magnetic unit which is arranged within the case. This unit is composed of the permanent steel magnet, the pole pieces, the electromagnet coils, the diaphragm, etc., and constitutes the magnetic medium through which the incoming electrical impulses are transformed into sound waves.

The receiver comprises two distinct elements, one of which is affected by the incoming varying electrical impulses—this is the electromagnet. The other is the diaphragm, a circular disk of high grade annealed iron about .006 to .008-inch in thickness, which acts in connection with the magnet and creates varying impulses or vibrations in the air that are audible to the ear.

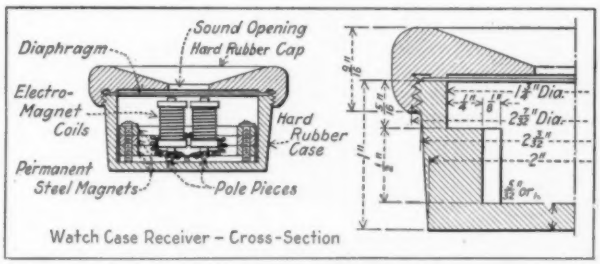


Fig. 2. Receiver Case and Ear Cap Sections

Figure 2 shows a cross-section of the assembled watch-case type of receiver. The permanent steel magnets set up and maintain a constant magnetic force which acts on the diaphragm and tends to draw it toward the pole pieces. The magnetic influence passes from the permanent magnets up and through one pole piece to the diaphragm, then across it to the other pole piece and through it to the permanent magnet again, thus completing the magnetic circuit.

The soft-iron diaphragm is one of the most important parts of the radio telephone receiver. It is held rigidly under tension between the upper surface of the receiver case and the diaphragm ledge on the under side of the cap. Both of these surfaces must be perfectly flat and parallel to each other when assembled, so that when the diaphragm is secured between them, there will be no deflection due to the pressure of the cap. This will give the best possible uniform vibration to the diaphragm when acted upon by the varying magnetic current that is set up in the pole pieces by the varying strength of the incoming electrical currents, which travel through the electromagnet coils wound around the pole pieces and give clear and faithful reproductions of the sound waves in the air.

The enlarged sectional view of a portion of the receiver case, cap and diaphragm is shown to emphasize the importance of having the diaphragm held rigidly between perfectly flat parallel surfaces.

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[1]Data furnished by The Vulcanized Rubber Co., New York, N. Y.

[2]"Manufacture of Hot Molded Plastics," January 1, 1923, 216-18; "Hard Molded Plastic," August 1, 1922, 733-4; "Making Hard Rubber Goods from Hard Rubber Dust," March 1, 1922, 409-11; "Radio Equipment and Its Dependence on Rubber," June 1, 1922, 599-601; "The Superiority of Hard Rubber Radio Panels," August 1, 1923, 694-6; "Rubber in Radio Sets," May 1, 1922, 535-6; "Manufacture of Hot Molded Plastics," January 1, 1923, 216-18.

Dust Pressed Hard Rubber Ear Caps

Practically all hard rubber ear caps are made by the pressed dust process of molding. This process is essentially the forming of fine ground hard rubber dust into molded shapes by rapid curing under heat and heavy pressure. The process requires the exercise of special skill to be successful. Pressed dust hard rubber has the same electrical qualities and mechanical workability as hard rubber cured from raw stock, with the important advantage of much more rapid production, which proportionately reduces the cost.

Ear caps made by the pressed dust process are molded with such accuracy that the diaphragm seat is absolutely true and perfect and requires no machining. The internal threads also mold with great exactness and finish. Unlike molded phenolic resins which receive from the mold a fused or glass-like surface requiring no further polish, hard rubber surfaces are always finished by polishing.

Fig. 3. Ear Cap in Brandes Table-Talker

When polished, hard rubber not only presents a superior appearance by the elimination of unpleasant brilliant reflections but by the nature of the material it is highly agreeable to the touch. This point is of much practical importance in the case of ear caps, which are often held in contact with the ear for long periods. Also, the more a hard rubber ear cap, or any hard rubber article, is handled the better its polish becomes. Phenolic resin products under like conditions of service become disagreeable to touch and thus discommode the user, and this unpleasant condition increases rather than otherwise where contact is long maintained, as in the use of ear caps.

Special Application of Ear Caps

A well-known manufacturer, in whose telephone head sets hard rubber caps are used exclusively, has made a special application of the hard rubber ear cap in a loud speaker, which is illustrated in Figure 3. The instrument is virtually a telephone receiver mounted horizontally in a suitable base. The hard rubber piece corresponding to the ordinary ear cap is made thick in the center with a long outlet threaded for attachment of a fiber horn for distribution of the sounds received.

CRUDE RUBBER AND FABRIC CONSUMPTION PER UNIT OF MANUFACTURE

The following representative amounts of fabric and crude rubber used per unit in the manufacture of casings, inner tubes and solid tires of all sizes, are based on the August tire reports. The figures given represent the median in each case, not an arithmetical average. Simply told, the median is the figure used by more manufacturers than any other single figure, representing the amount of raw material used in each unit of manufacture. It is lower than the arithmetical average and reflects the true condition more accurately.

Fabric casings	contained	3.7 pounds of fabric per unit
Cord casings	contained	3.5 pounds of fabric per unit
Casings (cord and fabric together)	contained	7.7 pounds of crude rubber per unit
Inner tubes	contained	1.6 pounds of crude rubber per unit
Solid tires	contained	33.0 pounds of crude rubber per unit

The Rubber Association of America.

Cove Base Molds

In order to secure a sanitary tiled floor it is necessary to joint the floor against a cove base usually of the same material. This practice has long been followed in the case of vitrified tiling. Rubber tile manufacturers have now adopted it and are producing molded rubber cove bases in colors and qualities to match the tiling.

The usual sizes of rubber cove bases are 24, 30 and 36 inches long, from four to six inches high, and ¼, 5/16 and ⅜ inches thick. Special forms of base corners are made for both external and internal, right and left corners.

Structural conditions require cove bases of different forms, some of which can be made in two-part molds while for others three-part molds are needed. The illustration shows a two-part mold for producing a plain strip of base, represented by the sample in the foreground of the illustration.

A two-part mold is also adapted for making an external corner; a three-part mold is necessary to make an internal corner.

All base molds are built of machine steel that takes a very high polish when burnished, giving the molded rubber surface a smooth and neat appearance. Cove molds are made in different sizes to produce pieces of the dimensions mentioned above. They are also made with interchangeable strips so that the thickness of the base at the floor edge will correspond to and fit the thickness of flooring with which it is to be used for a variety of thicknesses of the cove base.

Internal and external corner molds are made to correspond in size and profile to straight cove strips. They include a right and left corner spaced about six inches from corner to corner in the same mold.

Brockton Machine Co.

Two-Part Mold for Making Straight Cove Bases

The back surfaces of cove base molds are either smooth or knurled for the secure attachment of felt which is cemented to the base before use.

The high polish of the front faces of the mold imparts luster to the molded pieces and adds to their sanitary quality.

SCANDINAVIA INCREASES PURCHASES OF AMERICAN RUBBER GOODS

U. S. exports of rubber goods to the Scandinavian countries have greatly increased during the present year, especially in the case of Norway and Denmark. The former country, taking in 1922 a total valued at only $665,428, has purchased during the first five months of the present year American rubber goods valued at $408,605. Denmark's total for 1922 at $744,538 should be compared with the figures for the first five months of 1923, or $582,016. Sweden, which purchased largely from us in 1922, the total being estimated at $1,109,348, compares less favorably, with a total for the five months of only $453,159.

Rubber Possibilities in the Mining Industry

Systematic Investigation Necessary—Rubber Lined Ball Mills—Rubber Covered Concentrating Tables —Wider Applications Possible

By Q. E. F.

MUCH has been written in recent years regarding rubber surpluses and the need for new uses of rubber. In the latter direction much has been proposed and considerable accomplished, yet only the more obvious possibilities of rubber seem to have been seriously considered. It is also a curious fact that the most original proposals for the use of rubber come from persons outside the trade. While many such suggestions are admittedly impractical, the mere fact that a suggestion is revolutionary should not condemn it until it has had a fair trial and failed. Such a trial has time and again resulted in the birth of a new line of rubber goods. As time goes on we shall undoubtedly see the development of innumerable new uses of rubber, many of which will not singly consume a great quantity of rubber, but in the aggregate will greatly swell the total consumption.

Basic Industries Should Be Studied

It is an unfortunate tendency of many manufacturers of rubber goods, as in numerous other fields, to follow along their accustomed rut, apparently wearing smoked sheet glasses, confining themselves to their regular line of products, and lacking the vision to extend and reapply them to new fields of industry and popular usage. Somehow the man in another industry too often senses the practical application of rubber to it before the rubber man does. Possibly this may result from the present tendency toward quantity production of a limited line of products. It may be good business but it does not make for progress. Certainly it presents an opportunity for new concerns to gain a foothold in the rubber industry.

To find practical new uses for rubber requires systematic investigation, a lively imagination, an open mind, and a willingness to experiment. Thus far most of the newly suggested uses of rubber have been evolved in haphazard fashion, but the time seems near at hand when the research departments of progressive rubber concerns will comb thoroughly one by one all the great industries, process by process and machine by machine, in search of ways in which rubber may serve better than the materials now in use. And in this campaign the voluntary suggestions of experts in the various industries may prove quite as productive of revolutionary applications of rubber as the investigations of rubber men.

Ball Mill Linings

For example, take mining, a basic industry supplying the raw materials for numerous lines of business of world importance. Just as rubber lined ball mills are already demonstrating their numerous advantages and general superiority over steel lined mills,[1] so the mining industry offers numerous opportunities for the successful application of specially designed rubber goods, either to supplement the devices already in use or to supplant them altogether. The following suggestions are made with emphasis on the fact that a mine manager or mill superintendent is continually striving to save a fraction of a cent per ton of ore mined and milled and to do so is ever ready to adopt a new product or adapt an old product to a new use.

Possible Uses in Handling Ore

Following ore from its source deep in the mine through the mill discloses several ways in which rubber might be applied advantageously. Ore blasted out in the mine is conveyed to the crushers in cars of steel or iron. The life of a car is short owing to the heavy wear of rock on steel in filling and dumping. Rust, due to water in the ore, hastens the disintegration. Cars with rubber lining to take the blow of the ore would reduce the cost of mining by making them last longer. Moreover, the water in the ore will wet the rubber, rendering it almost frictionless and prolonging its life for the present purpose.

The car of ore is rolled along to the dump at the crusher. Some cars are tilted and banged against a steel or wooden bumper, which damages the car and wears out the bumper. A rubber bumper would save the car and reduce costs.

After the ore is dumped it frequently slides down a metal chute, which wears rapidly, especially where there is much water in the ore. But this water would make the ore slip down a sheet of rubber with little wear, saving time and money.

If the ore goes into a bin it usually comes out on a feeder. Some of these feeders are rubber covered belts, but others are just chutes. A metal covered belt would not last long enough to mention, but a rubber covered belt does. Where the ore slides out of the bin why not line the chute with rubber?

The crushed ore is fed onto a concentrating table covered with linoleum, probably because linoleum manufacturers have been better salesmen than rubber manufacturers. If a concentrating table was ever properly covered with rubber and the rubber discarded in favor of linoleum it was the rubber manufacturer and not the rubber that failed. These table tops are covered with little strips of wood nailed on with copper tacks. When the linoleum is to be replaced all these wooden strips and tacks must be removed, and it is a lengthy job. Linoleum manufacturers are making ribbed strip coverings for automobile running boards. It ought to be possible for some rubber manufacturer to make a molded rubber top for concentrating tables that will eliminate the wooden strips. These strips are placed in various positions by table manufacturers, but there may be enough of any one kind to make molded rubber coverings profitable.

If rubber lined pumps, rubber lined ball mills and rubber covered belts outwear steel, why not use rubber in other work where abrasion is an item to be considered in costs. For example, rubber lined pumps are commonly forcing abrasive materials into metal pipes which must be replaced frequently, especially at the elbows. How about rubber lined elbows and pipe? They might cost too much, but that ought to be figured out by actual test.

The Basis for Wider Applications

Carrying this principle into a wider field of usage brings a thought regarding ash handling. Ashes propelled by steam are lifted out of buildings and boats through metal pipes, but the ashes cut away the bends. A rubber lined bend wet with a small jet of water to lubricate it would probably outwear any metal in existence.

In general it may be confidently said that any place in a mining or milling operation where ore strikes against or slides on metal, especially when wet, or where iron, steel or wood is used to protect something from abrasion, is a prospective place for the use of rubber, bearing in mind that rubber at 60 cents per pound is equal or better than steel at 13 to 14 cents per pound. It can be molded to fit any conceivable place, and when the proper compound is used it will outlast any other material.

[1] THE INDIA RUBBER WORLD, August 1, 1923, 697.

The German Rubber Industry

Extent, Location and Vicissitudes of the Industry—Pioneers and Leaders

Vicissitudes of the German Rubber Industry

ALTHOUGH the first rubber factory in Germany was started near Berlin in 1829 for the manufacture of rubber thread and elastic fabrics, it was not until about the middle of the last century that the rubber industry was fairly begun. Thereafter it grew rapidly, sharing the general industrial growth which followed the establishment of the empire. Enterprise and progressiveness have characterized it. The whole world became its field, both from which to draw men and ideas for its upbuilding and as a market for its products. Rubber goods were probably exported from Germany to a greater extent than from any other country. At the outbreak of the world war Germany stood second to the United States in the extent of her rubber manufactures, and held first place among European countries. Germany led the United States in rubber goods exports three to one.

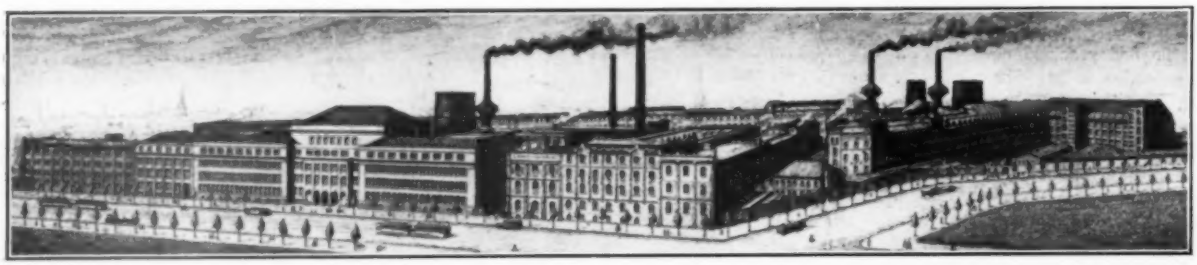
In 1914 the German rubber industry numbered approximately 600 manufacturing plants, of which 150 were companies of importance, about 20 manufacturing cables, and 10 each manufacturing tires and footwear. Several of its largest factories compared favorably with those of leading American firms. The total authorized capitalization was about $25,000,000, with a working capital of probably twice that sum, the authorized capital of 33 leading firms aggregating $20,943,500. Not less than 40,000 operatives were turning out manufactured rubber goods to the value of $80,000,000 annually, of which $32,500,000, or over 40 per cent were exported. Steam packings, rubberized fabrics, tires and tubes, hose, belting and textile goods were the chief products, with many miscellaneous goods in lesser quantities. The tire product alone amounted to $38,000,000, of which $14,000,000 was exported, nearly half to France and England. Italy, Austria-Hungary and Switzerland were the other largest consumers, with Russia, the Netherlands, Denmark and South America—chiefly Argentina and Brazil—also important.

During the war the German rubber industry languished, at first owing to loss of foreign markets and later due to lack of crude rubber for domestic and war requirements, when many different substitutes were experimented with; much was done with reclaim and a little with synthetic rubber. In fact, crude rubber import statistics serve as a fairly accurate measure of the rubber trade activities of the country. On the outbreak of hostilities Germany was using over 18,000 tons of crude rubber annually, or about 16 per cent of the world's production, of which one-fifth came from German colonies now controlled by the Allies. In 1917 and 1918 crude rubber imports dwindled to about 1,000 tons, owing to the effectiveness of the allied blockade. Following the armistice the consumption of crude rubber increased rapidly to 13,400 tons in 1920, 22,428 tons in 1921 and was then estimated at 30,000 tons for 1922. Probably this figure was not reached, however, for export business has only partially been recovered and political policy and economic upheaval have put a severe check on German industry of every sort during the past two years. Socialistic government interference, onerous reparations demands, lack of coal, an almost insuperable exchange situation, rising material and production costs are among the serious handicaps which have forced German industry to play a losing game.

Location of German Rubber Plants

While Berlin leads with over 100 rubber factories, they represent less than one-fourth of the total number scattered throughout the country. Hamburg and Hannover come next with some 30 rubber factories each, while other important rubber centers, named in their approximate numerical order are Frankfort, Dresden, Elberfeld, Cologne, Leipzig, Chemnitz, Barmen, Mannheim, Dusseldorf, Munich, Harburg, Erfurt, Dortmund and Breslau. More than twenty other cities have two to four rubber plants each and over 100 cities and towns have one plant each. Not less than one-fifth of the German rubber factories are located west of the Rhine and in the Ruhr.

Much historic and statistical data of interest regarding many German rubber companies which have won prominence in the industry have already appeared in THE INDIA RUBBER WORLD, and space now permits only a brief review of a few of the leaders and pioneers.



Continental Caoutchouc and Gutta Percha Co., Hannover, Germany

Continental the Leader

Germany's greatest rubber goods manufacturing establishment, and one of the leading rubber firms of the world, is the Continental Caoutchouc und Gutta Percha Compagnie, at Hannover. From a very modest beginning this concern has risen to its present important position in half a century.

In the sixties there stood on the site of the present works a small factory where rubber combs were made. It got into financial difficulties and was bought by the banking house of B. Magnus, who, with other financiers and rubber men, organized the Continental company with a capital of 900,000 marks in 1871. The factory was enlarged and in 1873 began the manufacture of play balls, tubes, horseshoe pads and rubber packing.

The business did not prove profitable, however, and in 1876 Dr. Siegmund Seligmann, acting for Messrs. Magnus, reorganized the

company and with the aid of that eminent chemist, the late Dr. Adolph Prinzhorn, put it on the road to rapid growth and great prosperity. Dr. Seligmann at seventy still presides over this great business, having succeeded Dr. Prinzhorn as managing director in 1909. His foresight brought German leadership in the manufacture of rubber tires to the Continental company and for many years Continental pneumatic tires have been famous throughout Europe. By 1908 some 6,000 tires per day and many other goods were being turned out in a great establishment capitalized at 4,200,000 marks, employing 6,000 hands and using one-thirtieth of the world's crude rubber output. Including a branch at Seelze, near Hannover, the works comprised nearly 50,000 square meters well covered with buildings.

By 1921 the capital had reached 284,163,502 marks, having been increased from 67,500,000 marks in 1920, 54,600,000 marks the preceding year and 12,000,000 marks in 1912. Today the firm employs 12,000 hands and possesses 16 houses, a coal mine, a harbor, ships and the like. It has 20 branches in Germany, and before the war had many in foreign countries, besides factories in Paris, France, and Melbourne, Australia, erected just prior to the war. Its export business has extended all over the world, leading all German rubber firms in this particular.

Continental products are varied, embracing almost everything made of rubber except footwear. Soft rubber goods are its chief manufactures, especially mechanicals, such as hose, belting, packing, etc.; rubber cloth, waterproof clothing, balloon and airplane fabrics; toys, balls and balloons, and cycle and automobile tires. It was the first German firm to make cord tires.

The Oldest Rubber Business in the World

Probably the oldest rubber goods manufacturing business in Germany, and the second largest in continental Europe, is that of the Vereinigte Gummiwaaren Fabriken Harburg-Wein, a consolidation of two much older firms effected in 1872. The firm's plant at Harburg a/d Elbe, near Hamburg, was established and erected in 1856 by the late Carl Maret, a construction engineer who had gained some knowledge of rubber goods manufacture in the United States. Rubber shoes were first produced and later balls and articles for technical use. In the early sixties the business, then operating under the name of Aubert Gerard & Cie., came into the possession of Menier, the famous chocolate manufacturer of Paris, under whose direction all kinds of soft rubber goods then known were manufactured.

At that time there was located at Wimpassing, near Vienna, the only rubber works in Austria, a plant dating back to 1811, when it was started by J. N. Reithoffer, to make the rubber thread which he used in elastic woven goods, and later producing a great variety of both soft and hard rubber goods. This is perhaps the oldest rubber factory in the world. Owing to the keen rivalry which developed between this and the Harburg factory the two were consolidated by the formation of the present company with a capital of 9,000,000 marks, of which 6,000,000 had been issued up to 1905. Carl Maret and Louis Hoff were respectively managing director and commercial manager, the latter later succeeding the former. To their enterprise is due the remarkable growth of the business.

Considerable plant extensions were made from time to time both at Harburg and Vienna, and in 1898 the firm's capacity was still further expanded by absorption of the former Hannoversche Caoutchouc, Guttapercha und Telegraphenwerke, situated at Linden, Hannover, where cut sheet, rubber plates and hard rubber electrical goods were manufactured. At that time the area covered by the company's plants was about 67 acres and some 3,500 hands were employed. A large export business was conducted throughout Europe and the Orient, sales offices were maintained in several large European cities and one was opened in New York in 1905. Some 7,000 hands are now employed. All kinds of hard and soft rubber goods for technical, chemical, surgical and pharmaceutical purposes are made, the most important perhaps being tires, rubber footwear, clothing, toys, balls, mechanicals, rubber thread and hard rubber.

Becoming interested in the exploitation of galalith in competition with hard rubber, celluloid and horn, the company in 1905 acquired the plant and business of the Compagnie Française de la Galalith, near Paris, and organized a subsidiary company with a capital of 1,840,000 marks under the name of Internationale Galalith-Gesellschaft Hoff & Co., with headquarters at Harburg. About the same time the company joined a syndicate known as L'Anglo-Mexicana, which engaged in the manufacture of guayule rubber.

In October, 1905, several buildings at the Harburg plant were destroyed by fire and a large amount of new construction was immediately begun, and larger and more modern brick buildings erected, not only replacing the departments destroyed but carrying out plans previously drawn for the enlargement of the works, including the galalith factory.

First Rubber Factory in Germany

One of the biggest and most prosperous German rubber companies is the Vereinigte Berlin-Frankfurter Gummiwaaren-Fabriken with its several large plants. The Berlin works are among the oldest in the country, having been founded by an Englishman named Elliott in 1849 on the banks of the Spree. After several changes in proprietorship, including that of a stock company under the name of Berliner Gummiwaarenfabrik Aktiengesellschaft, in 1883, the works were in 1886 combined with a renowned rubber works owned by Wendt, Buckholz & Co., established in 1869 in Gelnhausen, near Frankfurt a/M., under the present firm name and with a capital of 1,500,000 marks. A third factory was built in 1892 at Grottau in Bohemia, near the Saxon frontier. Under the management of Emil Spannagel the business expanded rapidly.

In 1905, the Berlin plant having become inadequate, the factory and business of Aktiengesellschaft für Fabrikation Technischer Gummiwaaren C. Schwanitz & Co. in the same city was taken over and the capital stock increased to 2,850,000 marks. The following year a fifth plant was acquired by the purchase of the long established firm of H. Schwieder, Sachsische Gummi- und Guttaperchawaaren-Fabrik, at Dresden, Saxony, and the capital increased to 3,500,000 marks. In 1909, the firm transferred from its old Berlin works to a new and modern plant at Gross-Lichterfelde near Berlin.

Several thousand hands are employed and a great variety of goods is manufactured both for home consumption and export. Tires, footwear, cut sheet, balls, hard rubber pumps, surgical and stationers' sundries, hose, rolls and other mechanicals are among the principal products.

Father of the German Marine Cable Industry

Among the oldest of Germany's leading rubber manufacturing concerns is the Rheinische Gummiwaaren-Fabrik, A.-G., which was founded as a private business at Cologne-Nippes in 1864 by the late Franz Clouth, one of the pioneers of the Germany rubber industry, and incorporated about 1901. Owing to the Franco-Prussian war the growth of this concern was rapid, the German army, navy and railway administrations becoming its best customers, and its market later extending to the whole of France. Army tents, diving apparatus and miscellaneous soft rubber and gutta percha goods were important early products, but by 1891 another plant had been erected for the manufacture of insulated wire and cables. This was in 1898 transferred to a separate corporation known as the Land- und Seekabelwerke, A.-G. Up to this time most countries had been content to leave the cable field to England, and the success of German manufacturers in this line was largely due to government encouragement.

In 1902 there were three Clouth factories in Cologne—the rubber and gutta percha factory, the canvas or camp-tent factory, and the electrical works. The plant covered some 20,000 square

meters, an average of 1,000 hands were employed, practically every kind of tires, hard and soft rubber goods, except rubber shoes and toy balls, were made and the business had become not only one of the leaders in Germany but one of the prominent houses in the world's rubber industry. Prior to his death in 1910, Herr Clouth became deeply interested in aeronautics and his firm active in the construction of air balloons and dirigibles.

To Franz Clouth undoubtedly belongs the credit of being the father of the German marine cable industry in general. He foresaw that the economic development of Germany and her colonial expansion policy required entering into competition with England in the manufacture and operation of oceanic cables. Due to his initiative several cable companies were organized, in all of which he was a director, and the Norddeutsche Seekabelwerke Aktiengesellschaft was founded in 1899, with a capital of 2,000,000 marks, which was doubled two years later and increased to 6,000,000 marks in 1902. Herr Clouth's wire works at Cologne was bought and a great plant for the manufacture of sea cables exclusively was erected at Nordenham on the Weser river, near Bremerhaven. This plant soon became one of the largest cable works in the world and a serious competitor of the British cable industry. The German Government offered the company the whole of its trade, gave it suitable tariff protection and helped in other ways. Considerable foreign business was obtained and many important cables in the Atlantic, Pacific and elsewhere were laid by its ships.

Other Prominent Pioneers

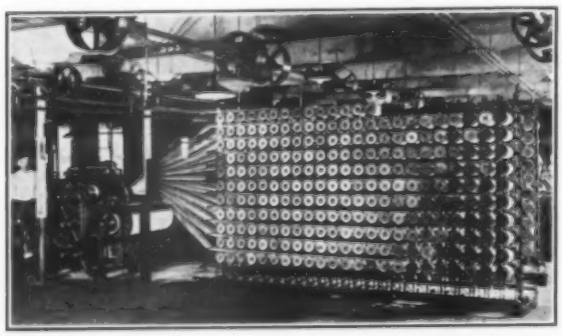
Another of the prosperous and important old manufacturers of pneumatic tires and miscellaneous hard and soft rubber goods in Hannover is the Hannoversche Gummiwerke "Excelcior," established in 1862 as the Hannoversche Gummi-Kamm Compagnie, A.-G., at Hannover-Linden. Since the war operations have depended on coal bought from America. In 1920 the firm's plant capacity and turnover were considerably enlarged and the capital increased from 6,000,000 to 10,000,000 marks. Over 5,500 operatives are employed. This concern was quick to follow the Continental company in the manufacture of cord tires.

The Aktiengesellschaft Metzeler & Co., of Munich, Bavaria, which was organized in 1869 as the Royal Bavarian Court Rubber Factory, Metzeler & Co., for the manufacture of belting, rubber technical, surgical and asbestos goods, in 1903 began the manufacture of rubber boots and shoes in competition with imported rubber footwear from Russia and elsewhere. Thereafter it came into greater prominence in connection with the manufacture of balloon and airplane fabrics, Metzeler fabrics having been used almost from the start in the construction of the Zeppelin dirigibles.

It was not until 1908 that the hose and rubber goods business of B. Polack, at Walterhausen, Thüringen, was incorporated as the B. Polack Aktiengesellschaft with a capital of 1,200,000 marks. The business has since expanded greatly and in recent years the firm has come into prominence as a manufacturer of tires.

Ultratex—A Weftless Product of the Loom

THE production of Ultratex fabric is a natural development in the endeavor to make a simple and commercial means for handling the cotton problem in the manufacture of weftless cord tires. Its use eliminates the necessity of installing creels with spools or bobbins in the rubber shop, and also permits the tire



Loom Producing Ultratex in a Cotton Mill

fabric manufacturer to continue to supply his tire trade with a product of the loom, yet weftless. It is difficult to think of a weftless product other than from individual threads or bobbins, and of course this eliminates the loom, whereas Ultratex is a product of the present day loom.

This newly developed product is not manufactured exclusively by any one tire fabric mill but is open to all; arrangements may be made for license to manufacture and distribute to the tire trade. In this way a tire manufacturer may purchase a weftless cotton product from his present source of supply, and looming mills can maintain their tire fabric trade.

In the manufacture of this product in the fabric mill the cords all start from bobbins carrying about 3,000 yards each. These are threaded through a holie board, then into a metal comb, passing over a tensioning roll of about 3-inch diameter and around an adjustable beam approximately 20 inches, adjustable tensioning weights supplying a friction or dragging effect. From this point the sheet of parallel warps consisting of 972 ends enter the harness, then through another metal comb of 18 dents to the inch, and is wound on a light shipping shell with wooden ends like a large spool—these ends being collapsible for shipping purposes.

The shuttle and harness motion of the loom is now engaged and an 18-inch header or end salvage is woven; then all weaving ceases and a separate and more rapid source of power is applied to the winding shell, whereby all the threads are drawn directly through the loom for 150 yards, the desired length. Then the winding motion is thrown out and the slower weaving motion is again engaged and 36 inches more is woven. Thus all threads are held in parallel formation of equal length between headers. This woven part of 36 inches is then cut through the center, forming the 18-inch end of one roll and the beginning of the next. A new shipping shell is inserted and the process is repeated when the shell, containing 150 yards of parallel warps held in place for easy handling by the two woven headers or ends, is burlaped and ready

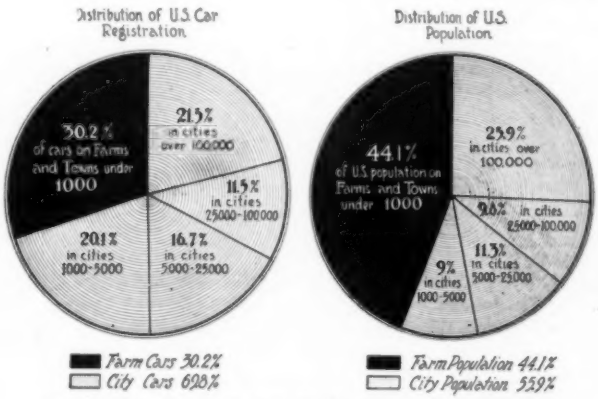
Ultratex Ready for Shipment

for delivery to the rubber shop, the same as an equivalent roll of cord fabric.

This method not only saves the cost of all the pick threads but increases the yardage production tremendously, yet does not disrupt the present channel of tire fabric business through the hands of the fabric looming mill.

Rural Districts as Market for Motors and Tires

That there is still a vast field for motor expansion, and consequently sales of tires, among farmers and in the rural districts of the country is the conclusion reached by the National Automobile Chamber of Commerce in its recent studies of the industry. It has been found that the ownership of motor cars is proportionately heaviest in the villages of 1,000 to 5,000 inhabitants, which have but 9 per cent of the United States' population and yet own 20 per cent of the total automobiles in use. It has also been noted that the


Distribution of U.S. Car Registration
30.2% of cars on Farms and Towns under 1000
21.5% in cities over 100,000
11.5% in cities 25000-100000
16.7% in cities 5000-25000
20.1% in cities 1000-5000
Farm Cars 30.2%
City Cars 69.8%
Distribution of U.S. Population
44.1% of U.S. population on Farms and Towns under 1000
23.9% in cities over 100,000
9.6% in cities 25000-100000
11.3% in cities 5000-25000
9% in cities 1000-5000
Farm Population 44.1%
City Population 55.9%

Distribution of U. S. Car Registration and Population

density of motor cars to population decreases as the towns increase in size. For example, cities between 5,000 and 25,000 inhabitants have 150 motor cars per 1,000 inhabitants, compared with 230 in the 1,000 to 5,000 class villages. The larger cities, those having a population of over 100,000, have approximately 84 cars per 1,000 inhabitants.

Evidently the farm market for motor cars and also tires represents, as compared with the rest of the country, an opportunity for still further expansion. The farmer owns 30 per cent of all the automobiles, yet on the basis of population he is not carrying his full share of the business.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(281) We are asked for addresses of manufacturers in the United States of the silk oilskins used in making raincoats.

(282) A prospective manufacturer of toy balloons, rubber gloves, etc., wishes advice concerning purchase of the necessary outfit.

(283) We are asked if there is a machine on the market for cutting rubber bands from used inner tubes and bicycle tubes.

(284) Information is asked concerning a rubber heel manufactured under the trade mark "Primo."

(285) A list is desired of manufacturers of rubberized cloth suitable for automobile tops, typewriter covers, etc.

(286) We are asked for a list of manufacturers of rubber balls.

(287) Subscriber wishes a list of manufacturers of hose making machines.

(288) Addresses are desired of manufacturers of gas engine gas bags.

(289) We are asked for the address of the manufacturer or sales agent of a small rubber article known as a "valve grinder." Resembles a miniature force cup.

(290) Addresses are desired of representative sources of supply of by-product whiting.

(291) Advice is asked concerning firms who might be able to make a thick, soft, pliable rubber bottle and tubing, according to specifications.

(292) We are asked for addresses of dealers in deresinated Pontianak.

(293) Exporter requests the addresses of manufacturers of rubber sponges and bath caps.

(294) Addresses are desired of manufacturers of melodeon sheeting.

(295) A subscriber asks to be advised where soft rubber tips for hard rubber piston syringes may be obtained.

(296) We are asked where cooling drums for rubber stock coming off the calender may be obtained; also steam vulcanizers.

(297) A subscriber wishes to get in touch with manufacturers of a machine for cutting oil well packer rings.

(298) Inquiry is made as to the most up-to-date method of sifting hard rubber dust, to separate the tailings from the dust after grinding.

Foreign Trade Opportunities

Address and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th street, New York, N. Y. Requests for each address should be on a separate sheet and state number.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
7,564	Norway—Rubber heels	Purchase and agency
7,852	Austria—Automobile tires about 3,000 to 4,000 yearly	Agency
7,855	England—Rubber boots, chiefly gum boots and hip boots, not goloshes	Purchase
7,860	Belgium—Automobile tires	Agency
7,936	New Zealand—Rubber goods and automobile tires	Agency
7,983	Wales—Rubber goods, including balloons of best quality	Purchase
7,984	China—Shoes with rubber soles	Purchase
7,985	Mexico—Rubber and elastic goods, such as garters and arm bands for men, and bathing caps for men and women	Purchase

Trade Lists Available

NUMBER	COUNTRY AND COMMODITY.
BE- 1005-A	Newfoundland—Rubber goods, importers and dealers.
FE-21035-A	India—Rubber goods, importers and dealers.
FE-19015-A	Netherlands East Indies—Rubber estates.

Foreign Tariffs

The Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C., has recently issued the following special circulars regarding foreign customs tariffs:

Circular No.	Country	Articles
276	Denmark	Rubber Goods
277	Haiti	Rubber Goods
279	Salvador	Rubber Goods
280	Nicaragua	Rubber Goods
287	French Morocco	Rubber Goods
290	Hungary	Rubber Goods
298	Czechoslovakia	Rubber Goods
299	Rumania	Rubber Goods
302	Portugal, the Azores, and Madeira Islands	Rubber Goods
306	Japan	Automobile and truck tires
308	Jugoslavia	Rubber Goods

Japan

According to a Japanese Imperial Ordinance, issued September 17 and effective until March 31, 1924, certain articles entering Japan are exempt from import duty. The list of these goods includes boots of leather and india rubber, and india rubber overshoes.

What the Rubber Chemists Are Doing

Rate of Vulcanization and Deterioration of Raw Rubber During Storage

By B. J. Eaton and R. O. Bishop

THE authors investigated 1,407 samples consisting of various types of raw plantation rubber prepared in connection with the vulcanization researches of the Department of Agriculture of the Federated Malay States. These samples were accumulated since 1914 and stored under tropical conditions. The average shade temperature during the day in the room in which the rubber was stored was about 90 degrees F. and the atmosphere was moist.

Conclusions

The authors' remarks and conclusions somewhat condensed are given below.

The recorded results of the present investigation confirm the opinion of one of the authors as expressed in the Report of the Director of Agriculture, F. M. S. and S. S. for 1919, quoted as follows:

STORAGE OF RAW RUBBER. Work on the storage of rubber in the tropics was started toward the close of 1918 when the problem was of commercial importance, owing to lack of shipping space. Numerous samples had been stored in the testing laboratory for periods varying up to five years, after parts of them had been vulcanized and tested. Fresh tests were made with a number of these and the results indicate that deterioration takes place especially in crêped samples. This is attributed to surface oxidation. A few old samples of slab rubber, stored as such, and containing about 15 per cent of moisture, were examined, and the results show that little or no deterioration had taken place. This is attributed to the presence of moisture and the small amount of surface exposed to oxidation. The tensile curves of stored samples are of different type from the original ones and resemble those of poor quality lower grade rubbers. Whether the effect is entirely due to oxidation or to a degradation of the caoutchouc molecule to another polymer requires investigation.

Another feature observed was that the rates of cure of samples after storage tend to even up. Fast curing crêped samples tend to cure more slowly while slow curing crêpes generally cure more rapidly. Slab rubber, stored as such, did not show this feature. Until further investigations have been made it is not possible to formulate any definite theories as to the cause of the change.

Samples of slab rubber stored in this form and containing about 20 per cent of moisture, are not markedly changed either in respect of rate of vulcanization or tensile properties.

It is also considered that if crêped samples of sheet rubber are pressed and stored as solid blocks, there will be little or no change in respect of rate of vulcanization or tensile properties, except perhaps in the case of a thin surface layer in these blocks.

A special feature of the results is the marked deterioration in quality of the crêped slab. Although it is not possible to offer any definite explanation of the decrease in rate of cure of the normally fast curing samples and of the increase in rate of cure of the normally slow curing rubbers, it is suggested that the decrease in rate of cure of the normally fast curing rubber is due either to an oxidation or some other change which has taken place in the natural accelerators present.

The increase in rate of cure of the normally slow curing rubbers may be due to the slow formation of accelerating substances in a damp atmosphere, that is, a slow decomposition of the proteins. In the normally fast curing rubbers the amount of protein present is probably very small, most of the nitrogenous constituents being present in another form, so that the loss of natural accelerators originally produced by maturation is not compensated for by the slow formation of other accelerating substances during storage.

A further explanation of the increase in rate of cure of normal crêpe samples may be the loss of some substance which is normally present and which causes retardation of vulcanization.

The sheet samples which have originally a rate of cure intermediate to that of slab and crêpe alter to the smallest extent in this respect on storage.

Only the very slow curing sheet samples speed up on storage to a marked extent and the fast curing sheet samples become slower in rate of cure on storage.

From the results recorded, it is evident that the optimum rate of vulcanization of a materially fast curing rubber does not depreciate by storage if the rubber is stored in a moist condition, though it appears that the original high tensile strength is not always maintained.

In the case of the 1922 slab, prepared between February and March of that year, and possessing an original rate of cure of 90 minutes, the exterior and interior rubber is identical in its rate of cure after one year's storage.

In the case of the fresh slab, made during February and March, 1923, the exterior rubber always vulcanizes more rapidly than the interior rubber. Only three instances are quoted here, but our records contain numerous other cases of the same nature, both with acid coagulated and spontaneously coagulated rubber.

From work now in hand evidence is forthcoming to show that this aging of the exterior of slab rubber is particularly rapid in certain cases.

Rubber from Evaporated Latex[1]

By O. De Vries

The following extracts give the author's views regarding the influence of the dried serum matters contained in rubber from evaporated latex.

Rubber containing all the by-substances of latex evaporated to dryness is supposed without proof to be the ideal of elasticity and keeping qualities. From the point of view of all concerned the serum substances in ordinary plantation rubber are a direct nuisance because they are the cause of nearly all faults and defects from mould on smoked sheet and spots on crêpe, rustiness, etc. The demand for serum substances in rubber comes from the manufacturer whose first argument is that hard fine Pará is the ideal rubber. Though prepared by an evaporation process hard fine Pará does not contain all the serum substances.[2] In fact, it contains only slightly more of them than plantation crêpe or smoked sheet. This is clear from its chemical composition as shown by the following approximate figures:

	Ash	Watery extract	Acetone extract	Protein
Hard fine Pará	0.3	0.5	3.0	2.0-3.0
Plantation rubber	0.15-0.45	0.2-0.7	2.5-3.0	2.5-3.5
Rubber from evaporated latex	1.5 -2.0	5-7	3.0-5.0	4.5-5.5

The figures for ash and watery extract show clearly that hard fine Pará has lost the greater part of the soluble serum substances and classes with plantation crêpe or sheet rather than with rubber from evaporated latex containing all the serum substances.

Latex Evaporation Studies

Evaporation of latex on a laboratory scale has been studied by

[1] *The India Rubber Journal*, 66, 1923, 7-8.
[2] "Estate Rubber, Its Preparation, Properties and Testing," 1920, 415, 423, 429.

different investigators, M. Kerbosch,[3] B. J. Eaton,[4] G. Vernet,[5] H. P. Stevens,[6] and O. de Vries.[7] The only process in which latex is evaporated as a whole so that the resulting rubber contains all the serum substances, and that has been experimented with on a fairly large scale, is the Kerbosch process.[8] The latex is evaporated on the inside of a large revolving drum by a current of hot air, which is led into the drum by a pipe with holes in the center, and projected against the latex-covered inside of the drum by a rapidly revolving fan.

No demand has arisen for evaporated rubbers. The apparatus gives only a small output and requires much supervision and care. The processes are not an improvement on the ordinary methods of preparation and have not been adopted. It is only since a more simple process of evaporating latex has been found, which is suitable for large scale production in central factories, that attention has again been directed toward evaporation of latex as a whole, especially as superior quality has been claimed for this type of rubber in the patent descriptions.[9]

Evaporation by letting the latex flow onto a quickly revolving disk and drying the cloud of extremely fine drops by a current of hot air was effected in Munich by the Krause process, and is used on a large scale for the preparation of milk, soap, glue, and other powders. A similar process is now in use on the Sumatra estates of the United States Rubber Plantations Co., and has been described at length in the technical journals.[10]

In view of the renewed interest in rubber containing all the serum substances it may be worth while to summarize our data on the properties of Kerbosch rubber as representing probably the best known of the older types of rubber from evaporated latex, without, of course, pretending that the properties of rubber obtained by other evaporation properties will prove to be exactly the same.

Properties of Kerbosch Rubber

Kerbosch rubber and other types of rubber from evaporated latex are hygroscopic. The presence of moisture and serum substances makes them liable to mouldiness. The rubber in a rubber-sulphur mix cures faster than ordinary plantation rubber, the time of cure being about 80 per cent of that of ordinary crêpe. If the evaporated latex is kept with a relatively high amount of moisture, changes similar to maturation take place, and the rate of cure increases. The time of cure may go down to 50 per cent or less of that of ordinary crêpe.

The tensile strength is about the same as that of rubber prepared in the ordinary way and often somewhat less. When using testing methods in which the quick curing rubber is exposed for a shorter time to the heat of vulcanization, the tensile strength may be found somewhat higher. The rubber crumbles on the mill and needs more heat to get plastic than ordinary rubber.

This type of rubber has not the much desired greater plasticity but is less plastic than ordinary smoked sheet or crêpe, consumes more energy in mastication and is apt, when treated after ordinary factory methods, to give a product which is less plastic than when ordinary plantation rubber is used.

The keeping qualities of Kerbosch rubber are rather poor and it has perished completely, become brittle, weak, and even tacky, in a time during which ordinary crêpe still keeps very well. The keeping qualities of vulcanized Kerbosch rubber, rubber and sulphur only, compare, as far as preliminary experiments go, rather unfavorably with those of ordinary plantation rubber, the decrease in extensibility, stiffening, and tensile strength being somewhat greater in the vulcanized Kerbosch rubber.[11]

Of these results the fact that the rubber containing all the serum substances is of inferior keeping qualities seems to be the most interesting and is perhaps somewhat unexpected. The large difference in keeping qualities between crude Kerbosch rubber and ordinary plantation crêpe is of general interest in that it shows that the presence of all serum substances is not beneficial to the rubber, but on the contrary, at least under certain conditions, causes it to perish more quickly than rubber obtained by ordinary acetic acid coagulation. The belief that the best type of rubber is one that contains all the serum substances will therefore have to be revised.

How far the above conclusions will hold true for types of rubber prepared by other methods of evaporating latex as a whole will have to be decided by special investigation. It seems probable that the vulcanizing properties of different types of rubber from evaporated latex will be very similar. Recent results of H. P. Stevens[12] confirm this conclusion.

The aging properties of the crude rubber may also be expected to depend more upon its chemical composition, including the moisture content, than upon the way evaporation is brought about, provided that not too high temperatures are used. It may very well be that plasticity and milling properties are to a large extent affected by the method of evaporation. Kerbosch rubber is not dried completely in the first operation but retains 5 to 10 per cent of moisture, which has to be removed by further drying. This after treatment may perhaps also have an influence on the plasticity.

Rubber obtained by spraying processes is said to dry practically immediately and at about the ordinary temperature, so that the proteins may perhaps precipitate or dry in another form[13] and a different plasticity might eventually result. Investigations on these and similar points promise to be very illuminating and to increase our general knowledge of rubber.

[3] *Meded. over Rubber.* Dept. van Landbouw, Buitenzorg 111, 1914.
[4] *bulletin Department of Agriculture,* F. M. S., No. 27, 1918, 78.
[5] *Bulletin Institute Coloniale de Marseille* 1, 1919, 112.
[6] *Journal of the Society of Chemical Industry,* 1922, 326 T, and *Bulletin, Rubber Growers' Association,* 5, 1923, 47.
[7] "Estate Rubber," 220.
[8] "Estate Rubber," 436.
[9] *India Rubber Journal,* 64, 1922, 820.
[10] THE INDIA RUBBER WORLD, 67, 1922, 207; *The India Rubber Journal,* 65, 1923, 89.
[11] *Archief von de Rubbercultuur,* 4, 1920, 466, 471.
[12] *Bulletin, Rubber Grower's Association,* 5, 1923, 46.
[13] *Bulletin Institute Coloniale de Marseille,* 1, 1919, 112.

Chemical Patents

The United States

VULCANIZING RUBBER. The variability of rubber vulcanized with sulphur and zinc oxide is overcome by adding to the rubber mixing substances capable of promoting dissolution of the zinc oxide in rubber, and vulcanizing the resulting mixture with the production of uniformly strong and well vulcanized products.—W. F. Russell, assignor to The Norwalk Tire & Rubber Co., both of Norwalk, Connecticut. United States patent No. 1,467,197.

USE OF DERIVATIVES OF THE CONDENSATION PRODUCTS OF AMINES AND ALDEHYDES IN THE VULCANIZATION OF RUBBER. Rubber is combined with a vulcanizing agent and an aldehyde derivative of the polymerized condensation product of an aldehyde and amine and vulcanizing the rubber mix.—Clayton Olin North, Tallmadge, Ohio. United States patent No. 1,467,984.

METHODS AND COMPOSITION FOR TREATING FIBROUS MATERIALS. The method of producing a composition of matter which comprises mixing paraffin and rosin, subjecting the mixture to heat and treating it with an oxidizing agent, maintaining the resultant product in a molten state and dissolving rubber therein and introducing castor oil as a softener for the product.—William C. Geer and John B. Dickson, Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,470,073.

RUBBER AND EBONITE SUBSTITUTES. Process of manufacture of rubber substitute comprising a hot vulcanized composition of a fatty acid and a vulcanizable oil.—Hermann Plauson, Hamburg, Germany. United States patent No. 1,471,059.

The Dominion of Canada

RUBBER COMPOSITION. The step in the manufacture of rubber articles containing a filler which consists in subjecting the filler to a degasifying treatment; covering the degasified filler particles with a thin film of rubber and mixing them with the rubber mass in a vacuum.—The International Western Electric Co., Inc., New York City, assignee of Robert R. Williams, Roselle, both of New York. Canadian patents No. 234,002 and No. 234,004.

PUNCTURE SEALING COMPOSITION. A puncture sealing composition of substantially the following proportions: Turkish birdlime, 320 ounce avoirdupois; shellac, 6 ounces avoirdupois; methylated spirit, 120 fluid ounces; diatomaceous, 120 fluid ounces; and water, 120 fluid ounces.—C. A. Cleghorn, East Molesey, Surrey, England. Canadian patent No. 234,362.

The United Kingdom

FIBROUS PLASTIC COMPOSITIONS. A composition suitable for the manufacture of tires, paving blocks, soles and heels, etc., is made of the following proportions in parts by weight: Rubber, 25; wood pulp, 25; iron slag, carborundum or emery, 20; china clay or calcined bone, 17½; graphite, 17½, and sulphur, 5.—R. Hutchinson, 25 Byram Arcade, Huddersfield. British patent No. 200,259.

GUTTA PERCHA SOLUTION. An adhesive solution of gutta percha dissolved with the aid of heat in trichlorethylene. Preferred proportions are gutta percha 4 ounces and trichlorethylene 20 fluid ounces.—R. Newton, 263 Stockport Road, Levenhulme, Manchester. British patent No. 200,726.

VULCANIZING RUBBER. Rubber in solid form or in solution is vulcanized with or without heat with the aid of a primary or secondary aliphatic amine. The following are typical examples of the process:

1. A sheet or article composed of 100 parts of rubber, 10 parts of zinc oxide, 3 parts of sulphur, and 2 parts of dibenzylamine is heated in a closed vulcanizer to 180 to 200 degrees F. in an atmosphere of carbon tetrachloride vapor. A mixture of 1 volume of carbon disulphide and 2 volumes of carbon tetrachloride is introduced, and the temperature maintained for 2 to 3 hours.

2. One hundred parts of rubber, 10 parts of zinc oxide, 3 parts of sulphur, 800 parts of benzol, 5 parts of benzylamine, and 5 parts of carbon disulphide are combined to form a cement which will vulcanize in 48 hours at ordinary temperature.—Naugatuck Chemical Co., Naugatuck, Connecticut, assignees of S. M. Cadwell, Leonia, New Jersey. British patent No. 200,788. Not yet accepted.

VULCANIZING RUBBER. The process for accelerated vulcanization which consists in incorporating with rubber or with latex a metal in combination, an amine, a material comprising sulphur, and a material comprising carbon disulphide or oxysulphide. One or more of the ingredients may be introduced into the rubber by diffusion, either in liquid or gaseous state or in solution in an organic solvent such as benzol, carbon tetrachloride, gasoline or chloroform. The following two examples are typical:

1. A rubber article is immersed for 60 seconds in a chloroform solution containing 1 per cent of sulphur, 2 per cent of tetramethyl-thiuram-monosulphide, and 1 per cent of zinc stearate. After drying, vulcanization is effected in 30 minutes at 275 degrees F.

2. Ten per cent of zinc oxide and 3 per cent of sulphur are incorporated in rubber either by milling or by addition to the latex, and the sheeted material is painted with dibenzylamine and with carbon disulphide. Vulcanization occurs in one week at ordinary temperature, or in two hours at 212 degrees F.—Naugatuck Chemical Co., Naugatuck, Connecticut, assignees of S. M. Cadwell, Leonia, New Jersey, and O. H. Smith, 2442 Morris avenue, New York, N. Y. British patent No. 200,789. Not yet accepted.

GOLF BALLS. The body of a golf ball is composed of a mixture of rubber, glue, inert fillers, and a vulcanizing agent, which is molded and vulcanized under pressure. A suitable composition consists of 35 pounds of rubber; 15 pounds of glue; 12 pounds of aluminum flake; 4 pounds of asbestos; 2½ pounds of sulphur, and 1 pound of zinc oxide.—T. W. Miller, 1 East 4th street, Ashland, Ohio. British patent No. 201,012.

VULCANIZING RUBBER. An accelerator for the vulcanization of rubber consists of cynamide or dicyandiamide. By adding an amount of dicyandiamide equal to the sulphur present, the time of vulcanization is reduced to half that required when using the sulphur alone.—D. J. Chatelan, 12 Terreaux, Lausanne, Switzerland. British patent No. 201,570. Not yet accepted.

MOLDED RUBBER ARTICLES. Rubber articles are produced by dipping a core or form into strained, ammonia-preserved latex, drying the film between dippings, and vulcanizing the dipped article by vapor of sulphur chloride by brushing with a solution of sulphur chloride, by immersion in molten sulphur or by other known method.—J. Jacques, 66 Grove Road, Wanstead, London. British patent No. 201,601.

VULCANIZING RUBBER. Substituted biguanides, such as monophenyl-biguanide, or their carbonates or carbamates are used as accelerators in the vulcanization of rubber mixings.—Pirelli & Co., Milan, Italy. British patent No. 201,885. Not yet accepted.

VULCANIZING RUBBER. Trisubstituted thio-ureas are used as accelerators in the vulcanization of rubber mixings. The preferred substances are monoaryl-dialkyl derivatives, such as phenyl-dimethyl-thiourea, and monoaryl-alkylene derivatives, such as phenyl-pentamethylene-thiourea. They are prepared by condensing an aryl sulphocyanide with a secondary aliphatic or alicylic base.—British patent No. 201,912. Not yet accepted.

VULCANIZATION COMPOSITIONS. An accelerator is produced by passing through the mill 1.5 parts of piperidine, 1.5 parts of carbon disulphide, and 6 parts of china clay, or 31 parts of zinc oxide. A vulcanizing composition is obtained by passing streams of sulphur dioxide and hydrogen sulphide into the mill while china clay or zinc oxide is being ground in it.—J. W. Spensley and Chemical Engineering Co., Ltd., 49 Deansgate, Manchester. British patent No. 201,968.

Germany

Patents Issued, With Dates of Issue

382,903 (March 19, 1920). Method of making insoluble plastic masses of phenols and an aldehyde. Charles Moureu and Charles Dufraisse, Paris; represented by: C. v. Ossowski, Berlin W. 9.

382,989 (April 10, 1918). Method of regenerating old rubber. Constantin Georgi, Zehlendorf, Wannseebahn.

383,019 (September 19, 1916). Method of making masses simulating horn, ivory or hard rubber. Richard Max Lehnert, Industriestrasse 23, Dresden.

384,007 (October 14, 1917). Method of making plastic and elastic substances. Farbenfabriken vorm. Friedr, Bayer & Co., Leverkusen bei Köln am Rhein.

384,147 (January 31, 1920). Method of making substances similar to hard rubber. Wenjacit, G. m. b. H., Hamburg. Addition to patent 351,104.

RISO

The manufacture of fine, uniformly porous sponge rubber is difficult to effect by the use of ammonium carbonate ground into the rubber mixing by itself because of its uneven distribution in the mass and the uncertain loss it sustains by the heat of mixing. These uncertainties are practically eliminated by the preparation known as Riso, which is ammonium carbonate ground in cycline oil.

This material is put up as a paste much the same as white lead ground in oil. In this form there is very little, if any, decomposition of the ammonium carbonate, consequently accurate and uniform sponging can be easily obtained by its use either in hard or soft rubber.

New Machines and Appliances

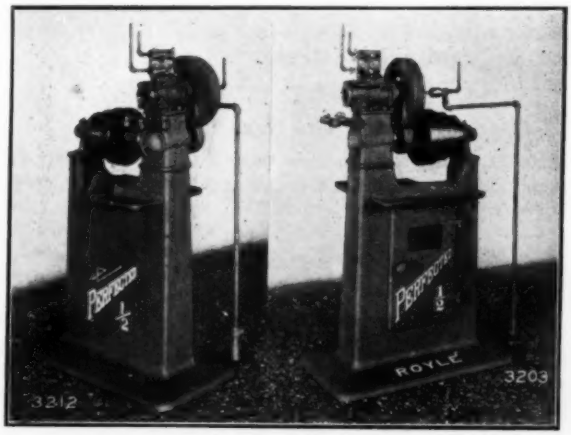
A Tubing Machine for Small Work

THE laboratory has assumed a rôle of such importance in industry that it might almost be called its very heart. Certainly as a means to the progress and development of the last quarter century it justly claims a large share of recognition. The very roots of the rubber industry lie in the research and experimental laboratory. Improvement of stocks and compounds, discovery of exact combinations to meet well-defined needs, development of new and more economical processes have made possible the great forward strides of these later years.

For the equipment of this "inner shrine" of the rubber industry much special machinery has been designed. Final test and experiments often demand shop conditions in the laboratory. So special mills and calenders and tubing machines are built for this purpose. The "Perfected Tubing Machine No. ½" is one such and has won a place of recognition among the array of laboratory machines. It is small; it is adaptable; it is easy to manipulate. With a cylinder bore of 1⅛ inches its normal die limit is ½-inch, although with the use of direct dies this may be extended to include ¾-inch—limits not only suitable for a wide range of experimental work, but for the production of small tubes and solids also.

The No. ½ Tuber may be driven by motor or by belt through cone pulleys and countershaft, either from the side or from the rear. The construction principles of the larger "Perfected" tubing machines are embodied in this small unit. Through a simple arrangement of valves in a chest surmounting the cylinder, a temperature control system that includes a cylinder and a head and, if desired, a stock worm chambered to permit a continuous circulation of water and steam, provides adequate means of regulating stock temperatures.

A stock worm of decreasing pitch, cut from a solid steel bar, increases the amount and homogeneity of stock brought forward



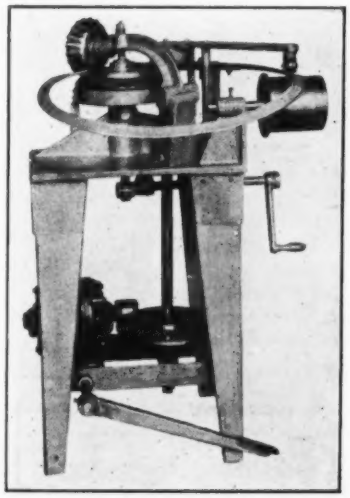
SIDE DRIVE REAR DRIVE

Royle Perfected Tubing Machine No. ½

to the head fixtures. The severe back-thrust of this worm is absorbed by a thrust bearing of the marine type. The outer shell or casing of this bearing is designed to form a support for the main gear, which transmits the driving power to the thrust block and thence to the stock worm, keyed into the block, through a three-point clutch which extends over and engages directly with the block itself. By this means the stock worm is freed of any tendency to eccentric motion. For the driving unit of the machine cut spur gears and pinions are used, and for the mutual protection of these parts and the operator they are encased in iron covers. The machine is also designed to admit a wide interchangeability of plain tubing, soapstone and insulating heads and fixtures.—John Royle & Sons, Paterson, New Jersey.

Tire Bead Flipping Machine

The cores of tire beads are covered with a single ply wrapping of bias friction fabric, one edge of the covering extending beyond the other. The application of this flipper strip is slow work when it must be done by hand.



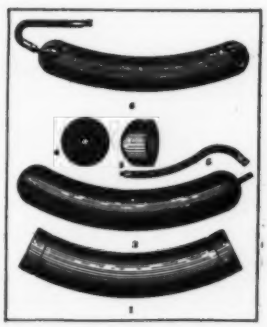
Utility Bead Flipper

The illustration shows a new motor-driven machine for applying a flipper to a bead core with neatness and dispatch. The bias frictioned strip feeds upward to the top of the flanged guide roller at the right. This roller is adjustable to receive different widths of fabric and also control its lap around the bead. The bead to be covered travels horizontally under a grooved roller which guides the fold of the fabric strip and attaches it snugly around the bead. The rotation of the bead moves the fabric through the folding roll. The last operation consists in stretching smooth the outer edge of the folded strip to make it stand out straight around the bead.

The entire operation of applying the fabric is done by the machine, the operator supplying beads and fabric and cutting the latter at the overlap of the joint. A skilled operator is able to cover four to six beads a minute with this machine.—Utility Manufacturing Co., Cudahy, Wisconsin.

Double Tube Repair Air Bag

A new idea in air bag construction is here illustrated. The principle is the same as an inner tube enclosed in a tire casing. Its advantage over the ordinary air bag is essentially the same as that of a double tube tire over a single tube tire.



Details of "Superior" Air Bag

The details of construction are shown in the illustration, in which (1) represents the outer casing capped at the ends with beaded covers that interlock with corresponding beads on the ends of the casing similar in construction to the rim and beads of a clincher tire; (2) is a replaceable inner tube which is inflated in the bag; (3) and (4) are metal caps for protecting the ends of the inner tube; (5) is the rubber tubing for inflating, while (6) shows the assembled inner tube.

The advantages of this double tube bag are: double the service obtainable from the ordinary bag; no possibility of pinching the bag in the bead mold; perfect cones and smooth repairs on the inside of the tire.—Superior Air Bag Co., Inc., 637 South Central avenue, Los Angeles, California.

"Weldox" Rubber Repair Process

A rubber repair method of English origin and known as the "Weldox" cold welding process is of particular advantage to the motorist for making quick and permanent repair of cut tires.

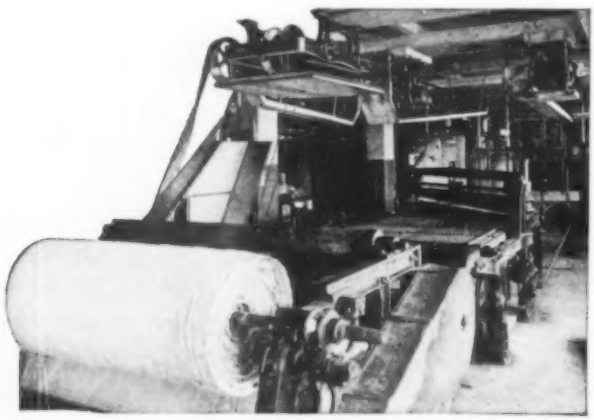
The method consists in first washing the cut with a flux before filling it with a specially prepared rubber compound, a piece of which of suitable size to fill the cut has been made plastic by softening it by the application of the Weldox fluid to render it tacky. It is then pressed into place and effects a permanent repair in a few moments without application of heat.

A Tire Tread Repair

The method is equally adapted for the repair of burst inner tubes, cuts in rubber goods in general and for uniting rubber to rubber, metal or wood.—Weldox, 81 Page street, Westminster, London, S. W. 1.

Variable Speed Transmission

The operation of machines at adjustable speed usually requires a variable speed transmission by which any speed between the high and low range is brought within control of the operator.



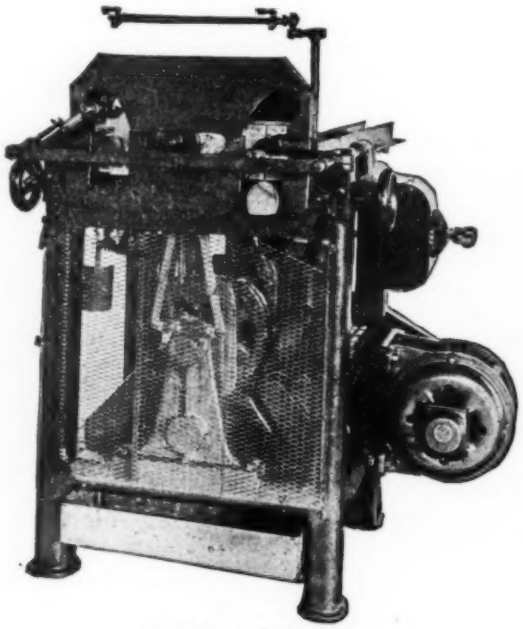
Reeves Variable Speed Transmission Driving Bias Shear

In rubber manufacturing there are numerous situations where speed control is essential to efficient production. One of these is indicated in the illustration, which shows a ceiling installation for regulating the production from a bias shear in a tire factory. The change of speed is accomplished by turning a shifting screw which adjusts the relative diameters of the driving and driven pulleys.

Other rubber working machines to which variable speed transmission can be advantageously applied beside bias shears, are small calenders, tubing machines, stock delivery aprons, spreaders, belt machines, various inspection machines, printing presses, etc.—Reeves Pulley Co., Columbus, Indiana.

Rubber Stock Cutting Off Machine

The compact motor-driven machine here pictured was specially designed for cutting accurately and rapidly tubed rubber stock for such molded goods as plumbers' supplies, balls, heels, hose washers,



Black Rock Stock Cutter

etc., or to cut cylindrical cured stock into washers and gaskets for garden hose, gage glass tubes, bottle stoppers, connectors for radiators, and bumpers and pads in great variety.

This machine is briefly characterized as an accurate, automatic, fast, motor-driven unit. It is built for continuous service and will meet expectations in the matter of maintaining uninterrupted volume production.—Black Rock Manufacturing Co., 175 Osborne street, Bridgeport, Connecticut.

Split Rim Tire Changing Tool

Autoists, garage men, and tire repair men will appreciate this tire rim tool that makes tire changing easy under the most unruly conditions. The power required to spring the rim inward is applied by a jack screw and a pair of bevel gears operated with a hand crank.

Pacific Rim Tool

This tool is quickly adjusted for any size and type of split rim and is easily applied and operated. The handle will stay set regardless of the strain on the tool, which requires no locking device, thus making it safe for anyone to operate. The arms are hinged and move with the rim when contracting or expanding it, which avoids springing the rim.

The tool is compactly built and folds to a convenient size for carrying in the service car, and weighs but ten pounds. It can

be operated on a stand as well as on the ground and has been approved by the service men of the leading automobile manufacturers and government transport departments.—Pacific Rim Tool Co., Seattle, Washington, and 166,606 Waterloo Road, Cleveland, Ohio.

Belt Cutting Shears

The difficulty experienced in making a clean square cut through rubber, duck, or leather belting is entirely obviated by the use of the hand shears here pictured. The special feature of this tool is

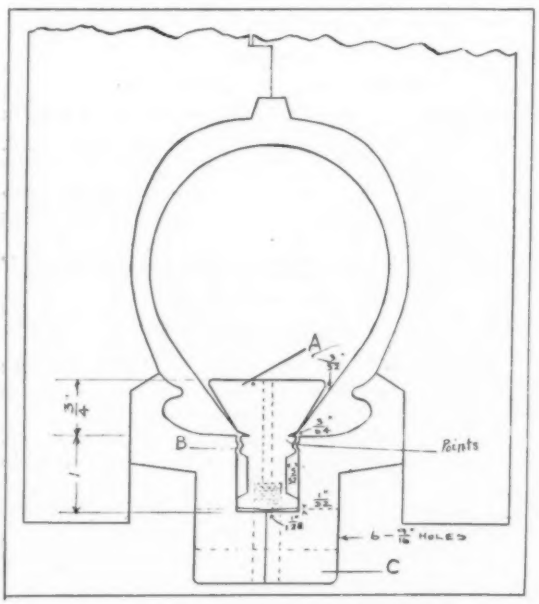
"Klincha" Belt Shears

the notched edge of one of its blades which affords a positive non-slipping grip on the material to be cut, thus facilitating the operation.

These shears are equally well adapted for other rubber factory uses, such as cutting crude rubber, and cured or uncured reclaimed rubber and compounded stocks. It thus finds a place in factory, machine shop, and laboratory.—W. T. Nicholson & Clipper Co., Ltd., Salford, Manchester.

Sealing Ring Displaces Air Bag in Tire Mold

The great expense necessitated by the use of air bags for holding tires under inflation in the curing molds has led to the inven-



Dykes Air Process Tire Mold

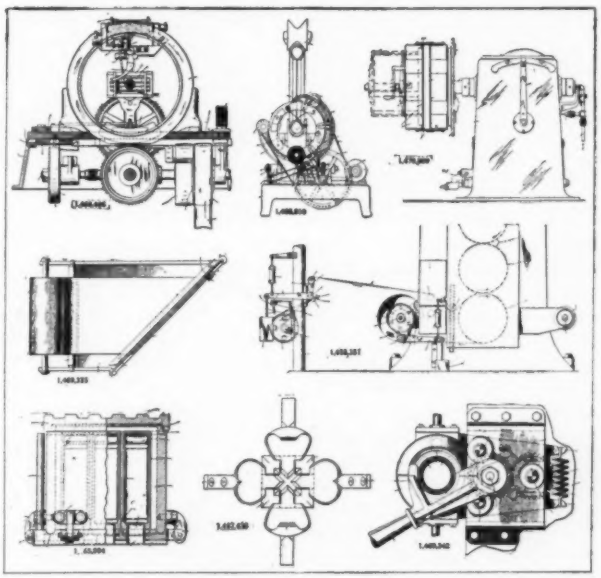
tion of various means to eliminate them from the curing process.

One of the most recent of these patented inventions is a special sealing or bull ring employed as shown at A in the illustration. This ring is so cut at B that it traps and holds, in connection with side clamping rings C, two plies of skimmed cord fabric which extend downward from the inner side of the toe of each tire head. The clearance between the bull ring A and the clamp or side rings C may be 1-32 to 3-64 of an inch to guard against pinching the trimmed edge partitions of the head. When thus clamped the rubbered plies serve as a tight gasket and confine effectively the air or gas pressure in the tire.

The sealing ring is so designed that a manufacturer can use his present equipment by the addition of a bull ring that fits between the clamping head rings, thus eliminating both cores or air bags from his molds.—Heller-Dykes Corporation, 1110 Michigan avenue, Chicago, Illinois.

Machinery Patents

APPARATUS FOR MAKING HOLLOW RUBBER BALLS. Four petal-shaped plates, hinged at their lower ends, are opened out and a sheet of rubber placed between them. When closed by lever and link mechanism the sheet is bent upwardly, surplus stock cut off and the edges united making air tight joints, after which the ball



is removed and vulcanized in the usual manner.—Alfred Lawton, Manchester, England. United States patent No. 1,467,438.

APPARATUS FOR STITCHING TEXTILE MATERIAL. A mechanism of tension rollers devised to control the tension both ways in a fabric during the operation of calender coating with rubber.—Hiram D. Ayres, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,468,351.

BALL WINDING MACHINE. An automatic, power-releasing and brake-applying mechanism to prevent overwinding of a ball when its predetermined size is reached. A yielding means urges the ball-holding head toward the winding plane but is adapted to be overcome by pressure of the ball as the latter enlarges to size and trips a stopping device.—Edward L. Schick, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,468,406.

WRAPPING MACHINE. A combination for wrapping a strip of paper or other material spirally about a tire, the mechanism including a rotating shuttle for the wrapper, and means for applying adhesive material to the wrapper under suitable guiding and driv-

ing conditions.—J. Scherner, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts. United States patent No. 1,468,610.

MOLD FOR BATTERY JARS. A box-like mold comprises hinged sides enclosing cellular blocks or cores arranged to receive steam circulation as mounted on a steam base, and a solid cover overlapping the hinged sides and holding them in place. This construction admits of water cooling the vulcanized box before its removal from the mold.—Richard T. Griffiths, assignor to The Miller Rubber Co., both of Akron, Ohio. United States patent No. 1,468,904.

STOCK CUTTING APPARATUS. A flexible cutting element consisting of a taut wire is arranged under a grooved pressure wheel which traverses the length of a guide bar and screws, without wrinkling, a sheet of thin rubberized fabric passing over the wire. The fabric is fed under the cutting wire by reciprocating pieces provided with suitably inclined fine bristles which advance the goods smoothly.—Frank J. MacDonald, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,469,325.

APPARATUS FOR VULCANIZING INNER TUBE SPLICES. A pair of hinged arms arranged with mechanism between two plates, have each a half cylindrical, steam heated section which can be closed tightly upon the ends of an inner tube mounted upon a mandrel for vulcanization of a splice. The curing mandrel is split in two parts so as to be receivable over the tube. Motion of the handlever locks the steam heated portion of the jars upon the tube during the cure.—Horace D. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,469,342.

APPARATUS FOR MANUFACTURING TIRE CASINGS. A sectional collapsible drum for the manufacture of tire casings by the "pulley-band process," demountably supporting an annular ring intermediate between the edges of its building surface. In expanded position these sections define a complete cylinder. In contracted position some of the sections are flush with the periphery of a supporting plate for the annular ring. The flat band casing, self-condensed marginally to a crescent shape by collapsing the drum, is given approximate tire form between two upstanding flanged presser rings arranged so that one of them can be shifted transversely over the contracted drum and supporting plate.

The drum is expanded and contracted by means of a hand crank mechanism and the presser rings by fluid pressure excited upon a piston located in the tubular axis of the apparatus.—William J. Steinle, Flushing, N. Y., assignor to The Hartford Rubber Works Co., Hartford, Connecticut. United States patent No. 1,470,889.

Other Machinery Patents

The United States

1,467,122 Machine for installing and removing tires from rims. J. W. Snell, Detroit, Mich.

1,467,142 Collapsible tire core. H. A. Denmire, assignor of one-half to the General Tire & Rubber Co.—both of Akron, Ohio.

1,467,143 Fabric-ring stretching and applying device. H. A. Denmire, assignor to the General Tire & Rubber Co.—both of Akron, Ohio.

1,467,801 Device for attaching cushion heels. W. L. Laurence, Brooklyn, N. Y.

1,467,948 Tire press. M. A. Pearson, assignor to Allen Machine Co.—both of Erie, Pa.

1,468,396 Selvage trimmer. E. D. Putt, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.

1,468,809 Tire-building machine. W. H. Hermann, Columbus, Ohio.

1,469,012 Beading and trimming device for tire-building machines. W. H. Hermann, Lancaster, Ohio, assignor to the Hermann Tire Building Machine Co., Lancaster, Ohio.

1,469,272 Tire building machine. W. H. Hermann, Lancaster, assignor to The Hermann Tire Building Machine Co., Columbus, Ohio.

1,469,753 Stitcher wheel and guard. J. W. Dirkson, Kent, and L. E. Clough, Akron, Ohio, assignors to The Mason Tire & Rubber Co., a corporation of Ohio.

The Dominion of Canada

234,018 Machine for making hollow articles of rubber. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, Canada, assignee of H. Z. Gobb, New York, N. Y.

234,025 Machine for making pneumatic tire coverings. The Dunlop Rubber Co., Ltd., Regent's Park, London, Birmingham, County of Warwick, both in England.

The United Kingdom

200,909 Vulcanizing apparatus. W. H. Welch, 182 Ashley Down Road, Bishopston, Bristol, and Frost & Co., Ltd., 148 Great Portland street, London, England.

Germany

Patents Issued with Dates of Issue

383,169 (February 1, 1920). Machine for kneading rubber and other plastic masses. Farrel Foundry & Machine Co., Ansonia, Connecticut, U. S. A.; represented by: G. Benjamin, Berlin S. W. 11.

Germany

Design Patents Issued with Dates of Issue

852,731 (February 14, 1923). Mold for rubber edges. J. T. S. Rubber Co., Limited, London; represented by Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, of Frankfurt-am-Main, and T. R. Koehnhorn and E. Noll, Berlin, S. W. 11.

852,786 (October 25, 1921). Mold for making and vulcanizing solid rubber tires. Enrico Frattini, Darmstädterstrasse 8, Berlin-Wilmersdorf.

Process Patents

The United States

1,467,289 Method of fabricating tire fabrics. C. M. Eames, Bridgeport, Conn.

1,467,761 Method of vulcanizing treads and mold used in such method. W. Martin Jones, Jr., Rochester, N. Y.

The United Kingdom

200,032 Rolling india rubber. Societé Anonyme Compagnie Des Caoutchouc de Palang, 7 Rue des Italiens, Paris, France.

200,563 Making tennis balls. A. Lawton and MacIntosh & Co., Ltd., Cambridge street, Manchester, England.

201,058 Tennis balls. W. J. Mellersh-Jackson, 28 Southampton Buildings, London, England.

201,531 Process for lacquering leather and rubber goods. J. H. Van Der Meulen, 16 Nieuwe Kade, Arnhem, Holland.

201,698 Moulding rubber heels, etc. T. Bretherton, Woodville, Moss Lane, Leyland, Lancashire, England.

Germany

Patents Issued, with Dates of Issue

382,977 (January 11, 1923). Attachment of rubber soles. Julius Roeper, Fürstenwalde, Spree.

383,088 (October 27, 1921). Method of making rubber shoes. H. C. L. Dunker and L. G. Stibe, Helsingborg, Sweden; represented by: Dr. G. Lotterhos, Frankfurt a. M.

383,405 (June 28, 1921). Method of making golf-balls with cores covered with rubber thread. Paramount Rubber Consolidated, Inc., Philadelphia, Pennsylvania, U. S. A., represented by: Dr. Breitenbach, Düsseldorf.

383,421 (March 22, 1919). Method of impregnating fibers, tissues, paper and the like with rubber. Runge Werke A.-G., Spandau.

MOLD WASH

A mold wash which is said to positively eliminate sticking and which compares favorably in price with soap-water, is being used with favorable results in a number of rubber factories. It is claimed that after using this wash there is no residue or discoloration of finished goods and that after being used for a dozen heats or so it need be applied only once for every four or five heats. Upon request samples will be furnished by the manufacturer.—The Wood Extract Co., South River, New Jersey.

UNITED STATES' EXPORTS OF SOLID TIRES, WHICH TOTALED IN THE calendar year 1921 only $1,300,081, and in the year 1922 $1,518,932, have already reached during the first seven months only of 1923 a value of $1,349,175, more than the figure for the entire year of 1921.

The Editor's Book Table

Book Reviews

"A HANDBOOK ON RUBBER USES AND THEIR DEVELOPMENT—Rubber Growers' Association £10,000 Prize Scheme." Published by The Rubber Growers' Association, Inc., London, England. Cloth, illustrated, 156 pages, with index, 6 by 9 inches.

THIS volume sums up in detail the replies obtained by The Rubber Growers' Association in their competition organized in 1919 regarding new uses for rubber. As the competition gained world-wide publicity, about 10,000 suggestions, representing over 2,000 entries, were received. In this volume under consideration these suggestions have been arranged under the following heads: Molded Articles; Open Heated Goods; Sheet Rubber; Proofed Material; Dipped Goods, Footwear, Leggings, etc.; Sponge Rubber; Tires; Raw Rubber Goods, Solutions, Paints, etc.; Vulcanite; Miscellaneous. It is believed that many of these entries contain germs of ideas having manufacturing possibilities. The book has been printed on rubber latex paper.

"THE DETERMINATION OF TIRE TEMPERATURES." BY A. O. Ashman, Research Laboratory, New Jersey Zinc Co. Paper, 19 pages, 6 by 9, illustrations, graphs.

This interesting pamphlet describes a method of measuring tire temperatures for experimental purposes by means of thermocouples and a potentiometer. The many improvements in method developed since the first pamphlet was issued are included in this bulletin. Copies may be obtained from The New Jersey Zinc Co., 160 Front street, New York, N. Y.

"AMERICAN SOCIETY FOR TESTING MATERIALS—A. S. T. M. Standards Adopted in 1923." Published by American Society for Testing Materials, 1315 Spruce street, Philadelphia, Pennsylvania. Paper, illustrated, 126 pages, 6 by 9 inches.

This pamphlet, which forms the second supplement to the 1921 Book of A. S. T. M. Standards, contains twenty-one standards adopted by letter ballot of the society on August 28, 1923. Among these specifications which are treated in detail are the following: D 14-23, Cotton Rubber-Lined Fire Hose for Private Fire Department Use; D 26-23, Cotton Rubber-Lined Fire Hose for Public Fire Department Use; D 120-23, Rubber Gloves for Electrical Workers on Apparatus or Circuits Not Exceeding 3,000 Volts to Ground; D 151-23, Rubber Pump Valves.

"FACTS AFFECTING THE IMPORTATION OF RUBBER PRODUCTS Into Finland and Central America." Two separate monographs prepared by the Rubber Division, Department of Commerce, P. L. Palmerton, chief. Published by Bureau of Foreign and Domestic Commerce, Washington, D. C. Paper, 8 by 9 inches.

Both these publications, though dealing with the rubber industry of small countries, contain useful statistics and various items of interest and importance. As may be imagined, United States products are very popular in Central America, our manufactures representing the chief source of supply for all kinds of rubber sundries and specialties used.

"AMERICAN SOCIETY FOR TESTING MATERIALS—YEAR BOOK, August, 1923." Published at the Society's headquarters, 1315 Spruce street, Philadelphia, Pennsylvania. Paper, 320 pages, 6 by 9 inches.

The 1923 Yearbook, as published by this well-known organization, contains not only the charter and by-laws of the association, but also a list of the members, with the names of the organizations with which they are connected. Of interest to the rubber industry are the sections and sub-divisions devoted to electrical insulating materials, rubber products, and textile materials.

New Trade Publications

AN ILLUSTRATED BULLETIN, NUMBERED 317, AND ENTITLED "Bristol's Tachometers, Recording and Indicating," has been recently issued by The Bristol Co., Waterbury, Connecticut. Several types of these instruments, illustrating both pneumatic and electric tachometer equipment, are represented, while several specimen charts display records made following installation in important industrial plants.

TWO WELL-ILLUSTRATED CATALOGS, FEATURING "STAR," "La Crosse," "Wisconsin," and "Badger" brands of recreation and work shoes, these including many varieties of rubber footwear, are being issued by the LaCrosse Rubber Mills Co., LaCrosse, Wisconsin. Several styles of rubber or composition soles are represented, many of the illustrations being in color. The LaCrosse organization guarantees its products to be free from defects in material and workmanship.

AS A SOUVENIR COMMEMORATIVE OF THE SEVENTY-FIFTH ANNIversary of the founding of the organization, the concern known as Toch Brothers, with main offices at 110 East 42nd street, New York, N. Y., is sending out an illustrated booklet to its patrons and friends. The booklet outlines the history of this company which since 1848 has specialized in the production of technical paints, varnishes, and waterproofing compositions.

Recent Articles Relating to Rubber

Poisson's Ratio and Related Properties for Compounded Rubber. (Mathematical.)—The authors have presented new data which indicate that the shape of the filler particles has an effect upon the properties of Poisson's ratio, volume increase under strain, permanent set, and the stress-strain behavior of compounded rubber.—W. W. Vogt and R. D. Evans. *Industrial and Engineering Chemistry*, October, 1923, 1015-18.

Selenium in Rubber Compounding. Selenium may be introduced into rubber by the addition of fused mixtures of sulphur and selenium. The color produced changes from yellow to red as the size of the particles of selenium increases. The crystallization of sulphur in rubber may be induced with selenium because selenium is isomorphous with monoclinic sulphur. In this way metastable solutions of sulphur are prevented and the initial rapid bloom of uncured stocks may be eliminated. Selenium exerts a distinct accelerating action upon rubber-sulphur mixtures, while the actual amount of combination with selenium is small. Selenium alone will produce some cure in rubber in the presence of an organic accelerator. The acetone extract of resin from the rubber is apparently reduced when vulcanization is carried out in the presence of selenium.—Ira Williams. *Industrial and Engineering Chemistry*, October, 1923, 1019-21.

Accelerators of Vulcanization. Accelerators and ultra accelerators defined, their potency determined and their reaction and those of other accelerators discussed. Graphs.—G. Stafford Whitby. *Industrial and Engineering Chemistry*, October, 1923, 1005-8.

1—Mercaptobenzothiazole and Its Derivatives as Accelerators of Rubber Vulcanization. L. B. Sebrell and C. E. Boord. *Industrial and Engineering Chemistry*, October, 1923.

The Preparation and Properties of 1—Mercaptobenzothiazole: Its Homologs and Derivatives. L. B. Sebrell. *Journal of the American Chemical Society*, 45, 2390 (1923).

Smoked Sheet from West Africa. Report on samples shows that the samples examined contained bubbles or airbells indicative of insufficient acid for coagulation or to want of cleanliness in

preparation. These defects do not detract from actual vulcanizing quality but affect price by spoiling the appearance. In other respects the rubber was satisfactory.—H. P. Stevens. *Bulletin of the Rubber Growers' Association*, September, 1923, 510.

Sprayed Rubber. Third Communication. The author concludes as follows: "So far experiment shows that sprayed rubber behaves in a manner very similar to ordinary plantation; that is to say, when cured up to the hilt a very short aging develops brittleness and general deterioration."—H. P. Stevens. *Bulletin of the Rubber Growers' Association*, September, 1923, 509-10.

Notes on Fresh and Preserved Latex. Comparison of coagulating properties and production of standard crêpe.—H. P. Stevens. *Bulletin of the Rubber Growers' Association*, September, 1923, 511-12.

Particle Size of Powders (Dutch).—Five methods are discussed for determining particle size of powders. Illustrated.—R. Houwink. *Chemisch Weekblad*, Vol. 20, No. 33, 1923.

Studies in Vulcanization. Review of a series of abstracts dealing with a number of papers on vulcanization by B. V. Bysow, and by B. V. Bysow and M. K. Popova, originally published in Russian.—Philip Schidrowitz. *The India Rubber Journal*, September 29, 1923, 3-4.

The Components of the Latex Serum and Their Influence on the Properties of Rubber. O. de Vries and W. Spoon. *The Rubber Age* (London), October, 1923, 437-40.

Contributions to the Swelling of Rubber. M. Le Blanc and M. Kröger. (German.) *Kolloid-Zeitschrift*, Leipzig, September 1923, 168-176. Tables, graph.

Colloid—Chemical Considerations Regarding Shellac and Rubber. (German.) C. Harries, *Kolloid-Zeitschrift*, Leipzig, September, 1923, 181-184.

Method of Making Rubber and Gutta Percha Articles from the Latex of Rubber-hydrocarbon-bearing Plants. (German.) R. Ditmar, *Chemiker-Zeitung*, August 2, 1923, 661.

Depreciation of Rubber Plantations. J. G. J. A. Maas. (Dutch.) *Archief voor de Rubbercultuur*, Buitenzorg, Java, August, 1923, 301-303.

Some Observations on the Components of the Serum and their Influence on the Properties of the Rubber. O. de Vries and W. Spoon. *Archief voor de Rubbercultuur*, Buitenzorg, Java. August, 1923, 342-350. Tables.

Latex Paper. E. L. Selleger. (Dutch.) *Algemeen Landbouwweekblad voor Nederlandsch-Indie*, Bandoeng, Java, August 18, 1923, 243-244. Short discussion of the manufacture of latex paper in general but particularly of small quantities of latex paper made at the paper factory of Padalarang, Java.

Brazil an Ideal Land for Rubber Cultivation. (Dutch.) III. Anonymous. *Nederlandsch-Indische Rubber-en-Thee Tijdschrift*, Weltevreden, Java, August 15, 1923, 350-353. Tables.

Some Data Concerning Crêpe Rubber for Soles. (Dutch.) Qr. J. G. Fol. *De Indische Mercuur*, Amsterdam, August 31, 1923, 577,579. Diagrams, illustration.

ENGLAND'S PURCHASES OF OUR SOLID TIRES DURING THE CALENDAR year 1922 totaled only $188,146, Cuba outstripping her with an importation valued at $196,391. However, for the first seven months only of the present year England has already taken such goods valued at $304,564, while Cuba's share for the corresponding period is estimated at only $120,625.

THE PHILIPPINE ISLANDS, OUTSTRIPPING OTHER NATIONS LAST year in the value of their importations of our canvas shoes with rubber soles, are apparently keeping up this high record during the present year. Their purchase last March included 72,794 pairs of such shoes, valued at $60,035. In July they took 87,474 pairs, valued at $58,416, although their highest figure so far for the year was reached in June, when they bought 98,947 pairs, valued at $68,880.

BRITISH DUNLOP TO COOPERATE IN STANDARDIZATION OF BALLOON TIRES

Colin Macbeth, development and experimental engineer of the Dunlop Rubber Co., Ltd., Fort Dunlop, Birmingham, England, arrived recently in America for the purpose of consulting with officials of the Dunlop Tire & Rubber Corporation, Buffalo, N. Y., on the American development of balloon, or low pressure tires.

After having satisfactorily proved the principle of the balloon tire in 1916, Mr. Macbeth was forced to defer development of the tire because Fort Dunlop was concentrating on war supplies. In 1920 the balloon problem was tackled once more with the object of making low pressure tires free from all known disabilities of clincher and straight side tires. Success, according to Mr. Macbeth, was obtained in 1922, about which time Dunlop standardized balloons in England. It is the desire of Dunlop, England, declares Mr. Macbeth, that American users and manufacturers have full benefit of its invention.

"My experience with balloons," says Mr. Macbeth, "has proved that their unique construction features are not provided in other low pressure tires. I have been using a set of balloons on my own car for some years. I am able to remove them and put them back on the wheels with my fingers—and without difficulty. The one-piece rim is an important factor in weight reduction and cost saving.

"Balloons, I have discovered, are perfectly safe when a burst—or blow-out as you call it here in America—occurs at a high rate of speed. Low pressure tires offer remarkable resistance to cut and puncture. Also it is possible to run several miles flat without damage to case or tube. The unique valve position allows use of disk wheels and front wheel brakes at the same time.

"Balloons will reduce the cost of motoring," says Mr. Macbeth. "Here in America you do not consider that a problem as we do in England. But you will in time. Experience has proved that the smaller car will be so comfortable with low pressure tires that many men will dispense with the larger machines. That of course will effect an enormous saving of motor fuel. Further, the smaller cars will do much toward solving the parking problem in the United States. Logically enough, it will be possible to park more small cars than large ones. Balloons, and balloons only, will permit small car development in this country."

Mr. Macbeth states that balloons make weight reduction of cars easy, so much so that he has run on one-piece aluminum wheels for the past year. Balloons will simplify the stock question he says, citing Dunlop, England, where there are five sizes of balloons against thirty-eight normal sizes. The biggest low pressure tires, he declares, can be taken off and put on in one minute.

Following conferences with American Dunlop officials Mr. Macbeth will call on other large American manufacturers in the hope that some standardization can be effected. English Dunlop, he declares, is ready to submit all data available, and hopes that American tire makers will find it of value. "We will show them what we have," says Mr. Macbeth, "and if they are interested they are welcome to it. If they have something better we hope we may benefit by it."

FEDERAL TRADE COMMISSION PLANS COTTON CONFERENCE

About thirty cotton exchanges and associations have received invitations recently sent out by the Federal Trade Commission to participate in a cotton conference to be held November 6, 7 and 8. This investigation regarding the various phases of the cotton industry is for the purpose of providing Congress with information to serve as a basis for legislation. Views of the industry are desired, particularly with reference to the revision of the future contract, including: (1) grades tenderable, (2) southern warehouse delivery, (3) establishment of differences in settlement for grades delivered and of spot quotations in connection therewith.

New Goods and Specialties

Balloon-Head Crying Rubber Doll

THE rubber crying doll illustrated is likely to prove a popular item for the holiday retail trade as it combines all the most popular features of such a toy, and an excellent margin of profit is allowed for dealers. It is made of heavy rubber in two brilliant colors, and when inflated is 5 inches in diameter and 15 inches high. The colors are vulcanized in the rubber and will not come off, so that the doll may also be included among the bathtub floating toys. Though it is not a thing of beauty it is soft and cuddly, and when squeezed or when the weight of its head makes it bend over in the child's hands it emits a not-too-loud two-toned cry. The head is a detachable balloon in still another color, a valve being located at the top for inflation. A wooden neck over which the rubber neck of the doll body fits contains the "voice."—Behrend & Rothschild, 353-357 Broadway, New York, N. Y.

The "B & R" Crying Rubber Doll

"Leyland" Multi-Braided Hose

The Leyland & Birmingham Rubber Co., Limited, has recently entered upon the production of high pressure molded hose in 500-feet lengths at their works at Leyland, Lancashire, England. The fabric is woven on, not wrapped around the mandrel, and by means of hydraulic pressure which forces the rubber through the interstices of the cotton perfect amalgamation of the cotton braiding and the rubber is insured. Of the two qualities of water hose made by this process the "Leyland" brand is the more powerfully constructed, though the "Bear" brand is said to be capable of a far greater amount of usage than the ordinary canvas wrapped hose. Another type of hose made by the same process is the "Leyland Braided Rockdrill" air hose, which has an external armoring that will not catch on rock edges or protuberances, can be bent round at a very small radius without kinking, and will withstand the highest air pressure used in rock drilling.

Rubber Hose Clips

The H. V. Patent Hose Clip

The principal advantage of the rubber hose clip illustrated is that it makes two complete coils around the pipe, thus equalling two ordinary hose clips. It gives equal pressure all around, does not pucker the tube, and fits standard or intermediate sizes. There are only two parts to the clip, and no threads to strip, so that it requires only 20 seconds to apply and insures a perfect joint. The manufacturer is looking for an agent in the United States.—Edward Viola, 75 Victoria street, Westminster, London, S.W. 1, England.

Water Bug Ball Game

The Johnson Motor Co., South Bend, Indiana, is staging the introduction of a new water game called "Water Bug Ball." It employs a large air-inflated ball 30 inches in diameter, which is pushed by operators of small boats through a goal made by two posts set some distance apart. The boats used are made on the principle of canoes, but are canvas covered and perfectly round. They are equipped with the company's 35-pound "Johnson" twin outboard motor, which has universal steering and can be turned sideways, in which case the boat will go round and round as on a pivot. The boat will carry from 10 to 15 persons easily and is capable of surprising speed.

A Convenient Tube Repair Kit

The "Handy Andy" tube repair kit illustrated is made in two sizes, the smaller containing 42 and the larger 88 square inches of patching rubber faced on one side with holland, and in addition a tube of rubber cement ¾ inch by 4 inches and a metal buffer. The rubber is self-vulcanizing and strips can be cut off in any size desired, to fit the place to be repaired. It is a wholesale supply of patches put up in a very compact package convenient for the retail trade.—The Miller Rubber Co. of New York, Akron, Ohio.

"Handy Andy" Kit

Rubber Tubing Device for Motion Picture Perspiration

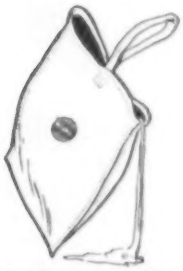
It requires a good deal of rubber tubing, rather than warm weather or hard work to make perspiration in the "movies." The picture at the left of the illustration shows how it is done. The

Kadel & Herbert News Photos

Glycerine and Water "Perspiration" for the "Movies"

fine rubber tubing is led up through the hair to the forehead and at the proper moment the bulb is pressed and down pours glistening drops of glycerine and water, with the effect shown at the right of the illustration.

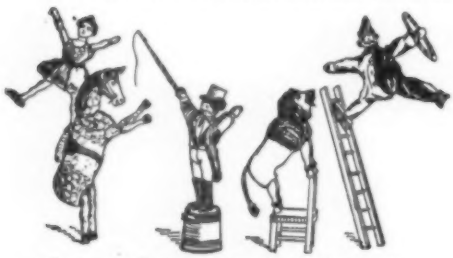
Rubber Cloth Emergency Water Bucket



Atlas Emergency Bucket

The dealer in automobile accessories will find this new type of emergency water bucket an interesting item. It folds flat and fits under the cushion seat, is made of genuine rubber cloth, and may be had with or without a spout. It holds one gallon of water, and has a convenient handle strap which is securely attached.—Atlas Specialty Manufacturing Co., Chicago, Illinois.

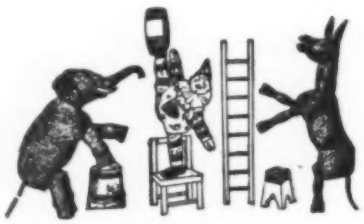
Additions to the Schoenhut Line of Toys



Clowns and Accessories in Reduced Size

The donkey and the elephant, with the clowns and other accessories of the "Humpty-Dumpty Circus" toys, are being made up this season in reduced size for the very small child. These toys are constructed of wood, leather, or rubber, according to requirements.

Another adaptation for the younger children is the game of "Kiddie Golf," illustrated below, which may be played indoors as well as out, and which will be a year-round seller, for this reason. Bill-Caddie and Mary-Hit-It are the names of the little figures at the ends of the clubs. The one-hole course set contains one club with figure, 3 miniature clubs and four balls, besides the paraphernalia necessary to mark off the course.—The A. Schoenhut Co., Philadelphia, Pa.



Infant Size Circus Animals

Schoenhut's Kiddie Golf

L. BEST CO., 28-30 WEST BROADWAY, NEW YORK, N. Y., HAS recently perfected a rubber bonded wheel for sawing and slotting hard rubber slabs such as are used in the radio industry.

Baseball Balloon

The toy balloon shown in the illustration will no doubt receive the unanimous vote of the baseball fans of the nursery as the most popular design of the season. It is an exact replica in appearance of the standard official baseball and is made of good quality rubber and equipped with a valve for easy inflation or deflation.—The Perfection Rubber Co., 2097-2107 Columbus Road, S. W., Cleveland, Ohio.

"Perfection" Baseball Balloon

"Five-Ten," a New Tennis Game

The sale of tennis balls will be prolonged the year round if the new game which is being introduced in England becomes as popular as predicted. "Five-Ten" is the name of the game and it is designed to give unlimited opportunity for practice to tennis enthusiasts, in fair weather and foul, indoors and out. No additional equipment is required other than a frame 8 feet wide having a net board 2 feet square and a lower net and backstop, the total dimensions being 15½ by 10 feet. The court used may be 12 by 7 or 7 by 3½ yards. The John Wanamaker store in New York, N. Y., claims to be the sole agency for the game in the United States.

Pneumatic Knee Grips for Motorcycles

The "John Bull" knee grips illustrated are composed of an outer shell of rubber held in shape by a flat steel plate inserted from the back and leaving an air-inclosed space. A projection of rubber inside the shell prevents the grips from collapsing under the pressure of the knees. Seven distinct patterns are provided and either a special soldered fitting or a strap for attachment to the tank is supplied.—The Leicester Rubber Co., Ltd., Post Office Place, Leicester, England.

"John Bull" Pneumatic Knee Grips

Hollow Hard Rubber Toilet Seat

The sanitary seat illustrated is made of finest grade hard rubber, with walls of unvarying thickness. Heavy hinges of aluminum bronze, which will not corrode, are screwed into metal inserts which are molded into the solid rubber back. The seat is hollow, airtight, light in weight, slightly resilient, and unbreakable.

Because the first cost is the only cost, this seat is thought by the manufacturers to be an especially attractive proposition for hotels, public buildings, office buildings, hospitals, and

The Luzerne Hard Rubber Seat

schools as well as for residences. It is supplied in ebony and mahogany finish, which is merely the high polish of the hard rubber and is not affected by the action of acid. Another finish is a permanent white which is molded over the seat, forming an envelope without joint or seam and is guaranteed not to crack, discolor with age, or be affected by acids or alkalies.—The Luzerne Rubber Co., Trenton, New Jersey.

"Mintite" Finished Hot Water Bottle

A hot water bottle recently received from the makers is a typical hand made English product with side top handle. The bottle has half inch wide seams all around stayed on the inside to be perfectly secure and watertight. A special feature of this bottle is the fact that its surface finish is produced by the material known as "Mintite," a patented mineral dust finish concerning which it is claimed that it gives to rubber goods a permanent polished surface that does not crack; protects them from injury by chafing, and from the deteriorating action of grease and acids, and renders them more resistant to heating.—Louis Minton, Trevelyan Buildings, Manchester, England.

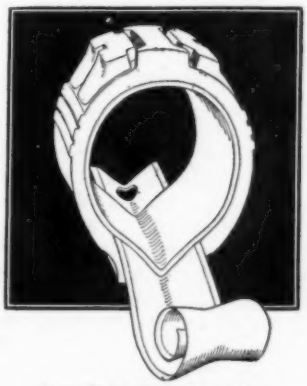
Clamp for Adjusting Length of Pencil Eraser

With the clamp shown in the illustration, the usefulness of the eraser at the end of the pencil is increased so that it lasts as long as the pencil itself. The rubber used is of good quality, and when it wears down on one end it may be taken out, reversed, and replaced, with a "like new" appearance.—Eberhard Faber, 37 Greenpoint avenue, Brooklyn, N. Y.

Adjustable Eraser Clamp

Inner Tube Protector

The inner tube protector flap here pictured is made entirely of rubber and furnished either on reels or cut to lengths. When in place under a tube the flap serves as a gasket excluding water from the casing. It does not shrink or work away from the tube and thus prevents pinching.



Star Tube Protector Flap

By its use firm seating is possible without danger to the tube as the central groove lets the tube down to its proper place. Unlike a fabric flap this all-rubber protector adapts itself to the sides of the casing as they flex, and by following the tire movement eliminates any possibility of chafing of the tube.

Added advantages are that it does not deteriorate from contact with water or grit nor rust to the rim.—The Star Rubber Co., Inc., Akron, Ohio.

THE EAGLE RUBBER CO., ASHLAND, OHIO, IS MARKETING A set of waterproof articles for keeping the baby clean and comfortable at the table. The set consists of a bib, a mat for the cup, a napkin ring, and a mat for the plate. The plate mat carries also a strip of the material arranged to hold the silver utensils. White rubberized fabric is used, which is guaranteed waterproof and is easily cleaned by wiping with a wet cloth.

Rubber Disks in Game of Pitch

Rubber plays an important part in a number of the season's popular toy items. Among these is the game of Pitch, in which a board is placed flat on the floor at a distance from the players, and round rubber disks are pitched so as to fall into holes in the board correspondingly numbered. — Parker Brothers, Inc., Salem, Massachusetts.

Popular Game Utilizing Rubber Disks

The New Miller Clincher Cord Tire

The new 30 by 3½ clincher cord tire which the Miller company has recently placed on the market has the regular "geared-to-the-road" flat tread, which the manufacturers say gives approximately 38 per cent more road contact, increases traction, cuts down road wear and eliminates skid. The flat top construction throws the hinging point to the sidewall and this practically eliminates disintegration of the carcass. There is a rib at the edge of the tread which adds strength and durability, and a smooth running strip in the center of the tread to which the beveled gears are affixed, making a noiseless tread.—The Miller Rubber Co., Akron, Ohio.

Another "Geared-to-the-Road" Product

The Dunlop Low Pressure Tire

Since 1916 the Dunlop company has been running cars with low pressure tires, it is said, and in the type which it is now ready to offer to the public the casings are of the wire-edge type identical in principle with the Dunlop-Welch wired-on bicycle tire patented in 1890. The rim is a one-piece unit having a circumferential well or sunken base which enables the casing to be fitted or removed with perfect ease and without the use of a tool. The wired edges of the tire are retained in position by a special molded safety rib which rests over the rim edge and prevents the tire from becoming accidentally detached even when run deflated. Rim diameters will be the same for all sections of tires, namely, 20 inches at the tire seating, each rim being capable of taking as an oversize the tire of the next larger section.—The Dunlop Co., Ltd., Birmingham, England.

Two-in-One Waterproof Utility Apron

The general utility apron in the illustration is intended to afford protection to the clothing of either men or women, the variations being merely in size, not in style, extra large size being provided. It is made of a specially prepared double coated rubberized material, gray on one side and maroon on the other, so that it can be worn with either side out, and is designed to slip on or off with the greatest ease. It is neatly tailored and is guaranteed to be acid and waterproof.—The Holley Co., Rochester, New York.

Rubberized Utility Apron

The Obituary Record

Well-Known in Rubber and Textile Trades

IRA FRANK BURNHAM, New York representative of the J. C. Haartz Co., textiles, Boston, Massachusetts, died in New York, N. Y., October 11, aged 45 years.

I. Frank Burnham

The son of Ira Foss Burnham, the veteran rubber clothing man who was long head of the Stoughton Rubber Co., Ira Frank Burnham was born in Boston, Massachusetts, August 25, 1878. Following his education in the public schools and Bryant & Stratton Business College, Boston, he entered the employ of the Stoughton Rubber Co., Stoughton, Massachusetts, in 1897. He learned the business quickly, advancing to assistant superintendent in 1905 and finally to superintendent in 1907.

Late in 1917 he resigned to become superintendent of the Cambridge Rubber Co., Cambridge, Massachusetts, then known as the Oxford Rubber Co. At that time the employes of the Stoughton Rubber Co. presented to him a handsome gold watch and chain as a token of esteem.

In 1919 Mr. Burnham entered the textile trade as factory manager of the J. C. Haartz Co., automobile top fabric manufacturers with a plant at New Haven, Connecticut. Two years later he became New York representative of the firm.

Mr. Burnham was a member of various Masonic bodies and of the Knights of Pythias.

New Jersey Tire Man

Edward S. Phillips, manager of the Burlington, New Jersey, branch of the Fineburg Tire Co., died recently at Mercer Hospital, Trenton, New Jersey, from injuries received when his automobile was struck by another car and thrown into a ditch. The deceased was 53 years old and leaves two daughters and a son.

Secretary-Treasurer of Norwalk Tire & Rubber Co.

Clifford Earl Mathewson, associated for ten years as Pacific Coast manager of the Diamond Rubber Co., before that company's consolidation with the Goodrich organization, and connected for the last nine years with the Norwalk Tire & Rubber Co., of Stamford, Connecticut, passed away at the latter city after a long illness. At the time of his death he was secretary and treasurer of the Norwalk organization.

Varied Career of Former Rubber Promoter

Following the reported death in Mexico City, Mexico, on September 24, of William Henry Ellis, attention has been directed to the picturesque and meteoric career of this one-time rubber promoter, known in earlier years as "the man who would be king." In turn cowboy, ranchman, banker-broker, promoter and later diplomatic envoy to Abyssinia, Mr. Ellis gained the friendship of Menelik, at that time king of Abyssinia, from whom he received many costly presents, including large grants of land, said to contain rubber forests. Later given the title of Duke of Hawash, Ellis formed a plan for ousting King Menelik, and becoming ruler in his place. This scheme failing, the adventurer then turned his attention to Mexico, where he attempted to form a guayule rubber company.

In the year 1909 Ellis again appears as instrumental in organizing an enterprise known as the Consolidated Palo Amarillo Rubber Co., with an authorized capitalization of $20,000,000. The yields of the Palo amarillo trees, indigenous to Mexico, from which it was proposed to extract rubber, were found on authoritative chemical analysis to contain a rubber-like gum, but no traces whatever of rubber. Since the failure of this enterprise also, little has been heard of this man who at one time attracted much attention.

Judicial Decisions

Evans vs. Stanwood Rubber Co. Court of Chancery of New Jersey. May 14, 1923.

The case represents an appeal from a previous decision, in the matter of the insolvent Stanwood Rubber Co., from a ruling of the receiver against the Union Trust Co., of Elizabeth, complained of by its president, Robert G. Evans. In the agreed state of facts it is stipulated that the Stanwood company was insolvent but that this was not known to the trust company. The final verdict was that the trust company had had constructive notice of the fact that the Stanwood company was unable to meet current obligations, and that its bank account was overdrawn. The receiver's ruling was therefore sustained.—*Atlantic Reporter*, Vol. 121, No. 1, page 2.

Bartling Tire Co. vs. Coxe. In re Posner Tire Co. Circuit Court of Appeals, Fifth Circuit. March 20, 1923. No. 3995.

This case represents an appeal from the District Court of the United States for the Northern District of Alabama, in the matter of the Posner Tire Co., bankrupt; John S. Coxe, trustee. A petition was made by the Bartling Tire Co. for the return of property delivered to the bankrupt on consignment, and from an adverse decree the petitioner appealed. It was decided that, upon the surrender of the trade acceptance, the request of the petitioner should be granted; that the decree of the court below should be reversed; and the cause remanded for further proceedings.—*Federal Reporter*, Vol, 288, No. 3, page 314.

McLaughlin vs. Fisk Rubber Co. In re Brown. District Court, District of Massachusetts. March 28, 1923. No. 1119.

This case involved a bill in equity brought by the plaintiff as trustee in bankruptcy of George Leroy Brown, Jr., against the Fisk Rubber Co., to recover certain payments made to the defendant which the plaintiff claims operated as a preference under the bankruptcy laws. It was stated that the plaintiff could only maintain his suit in equity by establishing a voidable preference under Section 60b of the Bankruptcy Law of the United States, and this the plaintiff had failed to do. It was therefore decreed that the previous report should be confirmed, and the plaintiff's bill of complaint dismissed.—*Federal Reporter*, Vol. 288, No. 1, page 72.

OMISSION OF ADVERTISERS' STREET ADDRESS

A special circular sent out to American publishers by the Post Office Department calls attention to the fact that in fifty per cent of the advertisements which appear in newspapers and magazines the advertiser's name and city only are printed at the bottom of the advertisement, the street address being omitted. This not only imposes a constantly increasing burden upon the post office, but also often results in nondelivery, resulting in loss of business to advertisers.

Activities of the Rubber Association of America

Board of Directors Meeting

THE Board of Directors met on October 25 and considered, among other important matters, the recommendations of the Foreign Trade Division to employ a foreign trade publicity specialist in the association office; the distribution abroad of British, French and Spanish editions of the association's booklet, "The Care of Pneumatic Tires"; and representation of the United States rubber industry in the rubber exhibit to be held in Brussels, Belgium, in April, 1924.

Division and Committee Meetings

The Hard Rubber Division met on October 10. One of the very important subjects considered was the formulation of a minimum quality standard and a uniform test for hard rubber radio sheet. The Division expects to have definite recommendations on this subject within the next month from a sub-committee which is studying the matter.

The Specification Committee of the Mechanical Rubber Goods Manufacturers' Division held its October regular meeting in the association offices on October 11. The Committee devoted its time to the consideration of federal specification requirements for mechanical rubber goods and the formulation of a tentative standard specification for oxy-acetylene hose commonly used by railroads. It was announced that many railroads have adopted the A. R. A. "Recommended Practice" specifications for rubber hose and axle light belting, which were formulated jointly by the Specification Committee and a sub-committee of the Committee on Specifications and Tests for Materials of the American Railway Association. This encourages belief in the ultimate success of the committee's efforts to bring about the universal adoption of standard specifications by the railroads throughout the United States. In the past, each railroad had separate specifications for mechanical rubber goods, with the exception of air brake hose, which is standard equipment, and the standardization work of the Specification Committee will prove of great benefit to rubber manufacturers and railroads as well.

The Traffic Committee held its regular monthly meeting on October 15 and gave consideration to a number of transportation questions affecting the rubber industry. The most important subject was the docket of the Consolidated Freight Classification Committee proposing various changes in rubber rates, and arrangements were made at this meeting to present the views of the Traffic Committee with respect to that docket. Other subjects were: the rules of the carriers concerning the assessment of demurrage charges; freight rates applicable to rubber tiling and fruit jar rings; the hearings being held by the Board of Railway Commissioners for Canada in connection with the application of the Canadian Express Association for an increase in rates in the Dominion of Canada; rates on tires to United Kingdom ports; and rates on tires and other rubber products from Atlantic to Pacific Coast ports on shipments moving via the Panama Canal.

Most of the members of the Traffic Committee hold membership in the National Industrial Traffic League, a national association composed of industrial traffic managers, whose annual meeting will be held in Chicago the middle of November, and for that reason it was concluded that the Traffic Committee will hold its regular monthly meeting in Chicago.

The Service Managers' Committee of the Tire Manufacturers' Division held a two-day meeting in Cleveland on October 18 and 19. Most of the session was given over to the preparation of copy on a truck tire educational pamphlet similar to the association's booklet entitled "The Care of Pneumatic Tires," four million and a half copies of which have been distributed to automobile owners throughout the country. Requests received from all sources indicate that this educational publicity is meeting with ready reception by tire users and is assisting materially in the proper interpretation and administration of the Standard Tire Warranty and Claim Form plan which was introduced by members of the Tire Manufacturers' Division on January 1, 1922. Requests are still being received by the association office for copies of the two placards, the first entitled "Standard Tire Warranty"; the second, "Are You Abusing Your Tires?" the latter containing photographs and text matter indicating the major and general abuses accorded tires.

On October 23, the Foreign Trade Division met in Washington and was addressed by Hon. Herbert Hoover, Secretary of Commerce; Dr. Julius Klein, Director of the Bureau of Foreign and Domestic Commerce; and the chiefs of the Far Eastern, Western European, and Eastern European Divisions of the Bureau, on conditions in their respective territories which affect America's foreign trade in rubber goods. P. L. Palmerton, chief of the Rubber Division, of the Department of Commerce, arranged this very interesting program, following which the regular routine meeting of the Foreign Trade Division was held.

The Accounting Committee advanced its work at a meeting in the association offices on Friday, October 26. Detail announcement to the membership of the association of the committee's recommendations may be expected shortly.

Marking Automobile Tires

The present specifications of the Official Express Classification provide that automobile tires for shipment by express must be marked either by a strong tag securely attached, and an address label pasted on the inner surface outside the wrapping, or in lieu of the pasted label a second tag bearing the same address must be concealed by securely binding it with burlap or cloth.

As substantially all tires are wrapped by a spiral paper wrap, it is possible to conceal the second tag beneath the folds of the paper, thus eliminating the use of cloth or burlap, representing a considerable saving in labor and material.

The Traffic Committee has arranged with the American Railway Express Company that the second tag may be partly inserted beneath the spiral paper wrap, thus eliminating the use of cloth or burlap.

The complete revised rule, effective October 15, 1923, in Supplement 8 to Official Express Classification 28, I. C. C. No. 1775, follows:

"AUTOMOBILE TIRES—When not boxed or crated must have two marks, both to be attached to the inner surface of the package, bale or tire, and to consist of (1) a strong tag securely attached, and (2) an address label pasted on the inner surface outside the wrapping or a second tag bearing the same address, partly inserted beneath the paper tire wrap, or if the tire is not wrapped, such second tag must be concealed beneath burlap or cloth."

Rates on Rubber Products to Pacific Coast Ports

The Traffic Committee has been in negotiation with the eastern carriers seeking a revision of the rates on straight carloads of tires and tubes and mixed carloads of pneumatic tires, tubes, solid tires and wheel rims and parts, including flaps and reliners, to Pacific Coast ports, and intermountain territory, from the Middle Atlantic and New England states. The rates applying on shipments via all-rail have been approximately $3.32 per one hundred pounds, depending upon the point of origin.

As a result of these negotiations, the eastern lines have recently agreed to establish a carload rate on the articles mentioned

of $3.00 per one hundred pounds, being a rate reduction of approximately 9.6 per cent. The new rates will not be made effective until the tariff organization of the carriers can place the new schedules in effect, which will probably be in about sixty days. Reductions in the carload all-rail rates to the same destinations from Pittsburgh, Buffalo and points west thereof, had previously been accomplished.

American Participation in Brussels Exhibition

Through the Institution of Rubber Industry, Great Britain, an invitation has been extended to American rubber manufacturers to participate in the Rubber Exhibition to be held at Brussels, Belgium, in April, 1924. The opinion was expressed at a meeting of the Board of Directors that it would be desirable for the association to be represented in the exhibition by a display representing new uses for rubber, or new ideas developed in the research departments of American rubber factories; also, that such participation might be considered an evidence of goodwill on the part of the Rubber Association and further the friendly relations already existing between the American rubber industry and that of foreign countries.

A sub-committee consisting of Messrs. Ernest Hopkinson, W. C. Geer, and W. F. Pfeiffer was appointed to submit to the board, at its October meeting, suggestions as to the manner in which the Rubber Association might be represented in the Brussels Rubber Exhibition.

How "Elimination" Helped a Druggists' Sundries Manufacturer

VOLUME production of a limited number of closely related articles is becoming increasingly the order of the day and has reached the rubber industry to a considerable extent. That a manufacturer of druggists' sundries could with benefit reduce his line from 1,600 to 6 items, however, seems remarkable, to say the least, yet this is the interesting story of evolution by elimination told in a recent issue of *System*, by Alexander M. Paul, president of the Davidson Rubber Co., Charlestown, Massachusetts.

Alexander M. Paul

1,600 Articles Manufactured in 1907

This company was established in 1857, manufacturing at first syringes and nursing nipples. In the search for more business it naturally spread out into the manufacture of a great many different varieties of merchandise allied to the drug, dental, surgical and stationery trades. This led to a complicated situation, loaded with detail and consequent overhead expense.

When Mr. Paul acquired the business in 1907 no less than 43 different classifications of merchandise were being made, in such a great variety of kinds, styles, colors and sizes that the total number of individual items was about 1,600, requiring a 67-page catalog in which to list them. For example, there were 48 different varieties of hot water bottles, 68 varieties of fountain syringes, and a multiplicity of atomizers, bed pans, camera bulbs, invalid cushions, mittens, gloves, bulb syringes, tobacco pouches, fountain pens and other articles.

"Elimination" Becomes the Firm's Motto

Many of the items and some complete lines were earning no money for the company and Mr. Paul soon began a process of elimination, simplification and standardization which continued up to 1920, when the firm's complete line had been reduced from 1,600 items to six. "Elimination" became in very fact the firm's motto posted on framed cards throughout the offices and shops.

Simplification of the line had to be gradual, however. To have discontinued a large number even of the unprofitable items at once would have left the firm with practically the same overhead and inadequate business, for each item carried some share of the overhead. One after another varieties and then complete lines were discontinued, greater sales volume for what was left being built as the elimination proceeded. Private brands and those lines which showed a direct loss, or the least volume, or the greatest duplication in styles naturally went first.

As each item was discontinued large losses had to be taken on useless molds and other manufacturing equipment, which are sold as such if possible, otherwise as junk. While these were paper losses only, since much of the equipment did not represent sufficient volume to earn its cost and therefore represented no real asset, they had to be written down as losses.

Line Reduced to Six Articles in 1920

By 1914 much had been eliminated and war conditions made it not only possible but highly desirable to carry the program forward ruthlessly. By 1916 the list had been reduced to 19 lines and a total of 115 items. In 1918 it was down to 67 items and to 8 in 1920, when it was cut to the present line of six articles, consisting of one fountain syringe, one water bottle, one combination bottle and syringe, one set of syringe fittings, one syringe tube (used for replacement), and one nursing nipple. Each item is in but one color, one size and one style. The whole line is illustrated on the back of their letter head, which serves as their catalog and price list. Even the sales force has been dispensed with, and business is now secured solely through mail and advertising.

Larger Volume, Lower Costs, Better Goods

Despite this limited number of items—or, rather because of it—over eight times as many syringes were sold in 1922 as in 1914 and several times as many water bottles. Decrease in variety was followed by a great increase in volume, considerably reducing production costs and making distribution easier. Avoidance of duplication of manufacturing operations has eliminated the wastes common to the production of a multiplicity of goods. The greatest gain has been in processing. Automatic machinery has replaced hand work in some cases, but the greatest saving has been in simplifying and eliminating processes formerly required, due to changing from one kind of work to another.

With this simplification and standardization, production costs today notwithstanding post-war conditions are considerably less than in 1914. Through the changes in distribution adopted this percentage of decrease has followed through to the consumer. However, the manufacturing control is widened not only in reduced costs but in improved workmanship and serviceability of the product.

PRACTICALLY THE NEAREST APPROACH IN ALL CENTRAL AMERICA to local rubber manufacturing is the production of raincoats in Nicaragua, these goods being manufactured at small plants in the interior and on the west coast.

Four Score and Ten

The Bourn Rubber Co.

ALTHOUGH it is not unusual in European countries for a family to continue in a business for a period of ninety years, it rarely occurs in America, perhaps due to changing commercial conditions, and the risks attending modern business ventures. To mention a notable instance of this sort, The Bourn Rubber Co., of Providence, Rhode Island, represents an organization with long and honorable traditions in the shoe and rubber trade behind it.

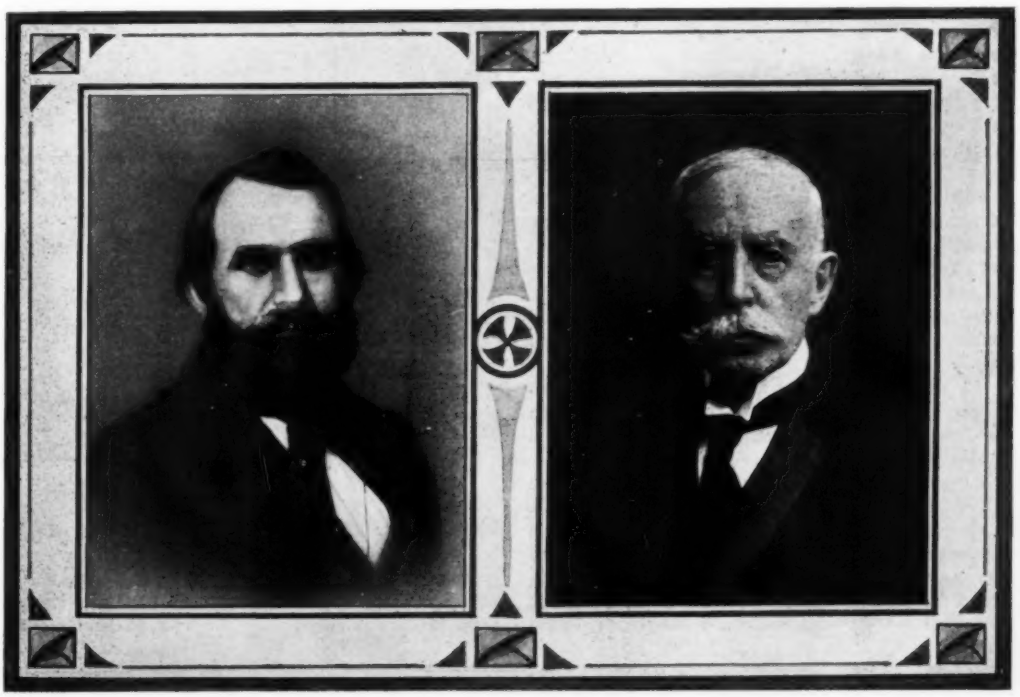
George Osborn Bourn

George O. Bourn, the founder of the original Bourn rubber business, was at first engaged in the manufacture and sale of leather shoes, conducting as early as 1832 a shoe store and boot and shoe factory at 69 Westminster street, Providence, where imported Pará rubber shoes were lined with cotton flannel and leather inner soles and counters were inserted.

Later he became interested in rubber shoe manufacturing and in 1840 formed a partnership with David L. Winslow, under the firm name of Bourn & Winslow, for the purpose of manufacturing rubber shoes, carriage and garment cloths, in part of the Barker chair factory in the rear of Green street. Their shoes were made from Pará rubber, dissolved in spirits of turpentine, with all the lampblack mixed with it that it would hold, and nothing else. These shoes were made up in buskin shape, mostly with leather soles, but some few had rubber soles. After a fair run for two seasons, making 250 to 300 pairs a day, the so-called acid shoe took the market. This was made of rubber lined with grass cloth and tanned in acid, but it too had to give way to the metallic shoe, and in consequence Bourn & Winslow closed their factory and dissolved partnership. It was this firm which originated the memorial against the extension of the Hayward patent.

In 1843 Mr. Bourn commenced making pure rubber shoes at his factory on Westminster street. They were mostly in sandal form with leather soles and heels, rubber shank, and leather strap across the instep, very desirable and commanding good prices. The rubber used for this purpose was imported in sheets 20 to 28 inches square and about one-sixteenth inch thick. From 1844 to 1850 he manufactured what was known as the "Providence" shoe, so known generally because the bulk of the American-made rubber shoes were produced in Providence.

In 1847 the late Colonel William W. Brown, of Providence, became a partner, under the firm name of Bourn & Brown. They were large manufacturers of "Providence" shoes down to 1851, when vulcanized shoes finally succeeded in displacing them. At this date Edwin M. Chaffee, a friend and some time partner of Charles Goodyear, and the inventor of machinery which came into general use in rubber manufacture, was admitted as a partner, and the firm began the manufacture of vulcanized rubber shoes with the name of Brown, Bourn & Chaffee. They were also to continue, under Mr. Chaffee's directions, a series of experiments which Mr. Goodyear and Mr. Chaffee had been interested in. These experiments were continued at the factory of the Bourn Rubber Co. for two or three years after the new firm was formed. At the time of the famous Hayward patent extension case Mr. Bourn was a member of three firms, namely, Bourn & Brown; E. M. Chaffee & Co.; and Brown, Hibbard, Bourn & Co.; all manufacturing rubber shoes and other articles, the business being carried on actively in both Providence, Rhode Island, and Montreal, Canada.



George O. Bourn — Augustus O. Bourn

Augustus Osborn Bourn

Upon the death of George O. Bourn in 1859, his son, Augustus Osborn Bourn, born in 1833, became head of the concern, having joined his father immediately after his graduation from Brown University in 1855. In 1861 the firm was incorporated as the Providence Rubber Shoe Co. About 1870 the organization became merged with the National Rubber Co., at Bristol, Rhode Island, an enterprise started by Mr. Bourn a few years previously, and of which he was treasurer and active manager. Following the reorganization of his company, about 1888, Mr. Bourn retired and spent several years in Europe, returning to the United States in 1893. The following year he again entered the rubber shoe business, establishing in Providence, Rhode Island, the organization since known as the Bourn Rubber Co. In recent years there have been many additions and extensions to the plant, which now covers a whole city block, and the production of insulated wire has become a part of the factory output.

No man in the rubber business has had a wider experience than Mr. Bourn. He is acquainted with every detail of the manufacture, as well as with the general management of the business. He introduced many new styles and originated numerous innovations while with the National Rubber Co., among them being "snow excluders," fusion linings for boots and lumbermen's goods, and button gaiters. He also manufactured the style now known as "Alaskas" several years before any other company produced this class of footwear.

As an investigator, his experiments in vulcanizing began in 1903, and were reported in an address at the Rubber Conference in New York in 1912, receiving the marked attention of all practical rubber men and chemists. He showed that the rate of vulcanization was doubled for every 11 degrees F. and that the same compound which vulcanized in 14 hours at a temperature of 194 degrees F. could be similarly vulcanized in 15 seconds in a heat of 327 degrees F.

Mr. Bourn has served ex-officio as a member of the board of directors and executive committee of The Rubber Association of America, and was the second president of the New England Rubber Club, the predecessor of the above-named association.

Mr. Bourn has been very prominent in political affairs. He was a member of the Rhode Island state senate from 1876 to 1883, when he was elected governor of the state. After serving two terms he was returned to the senate in 1886-87, during which time he fathered the amendment to the state constitution which extends the right of suffrage to foreign born citizens on the same conditions as to native-born. Following his temporary retirement from business in 1888 he accepted the post of United States consul-general at Rome, Italy, which position he held with credit until 1893.

On October 1 of the present year Mr. Bourn celebrated his ninetieth birthday and was the recipient of many remembrances from friends and employes. Hale, hearty and still active despite his advanced age, the dean of the rubber trade and one of the oldest living graduates of Brown University may well be described as ninety years young. The treasurer of his company and commuting daily to business from his home in Bristol, he continues to be a leading figure in the rubber industry as he has for the past sixty-four years.

SCHRADER PRODUCTS SHOWN IN WINDOW DISPLAY

A window display which cleverly advertises the company's products has been arranged at the offices of A. Schrader's Son, Inc., Atlantic and Vanderbilt avenues, Brooklyn, New York. The main feature of the display is a representation of a hand holding the Schrader tire gage, while instructions regarding the use of this instrument are placed on each side. Other Schrader valve parts and accessories, among them the tire gage, dust cap, valve repair tools, etc., are arranged about the front of the window.

An Attractive Display

Report of Inventory—Production—Domestic Shipments of Pneumatic Casings—Inner Tubes—Solid Tires

	Pneumatic Casings				Inner Tubes				Solid Tires			
	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
1922												
August	63	4,629,392	2,905,209	3,029,823	63	5,207,228	3,808,224	4,220,055	11	189,698	84,313	69,435
September	64	4,612,037	2,504,744	2,502,106	64	5,164,757	3,501,442	3,558,971	11	200,016	82,767	66,797
October	64	4,682,958	2,674,662	2,588,770	64	5,488,033	3,787,758	3,420,680	11	213,942	85,480	71,275
November	62	4,964,976	2,733,134	2,379,708	61	6,210,053	3,850,908	3,075,023	11	234,684	85,775	61,466
December	59	4,599,208	2,656,942	2,934,079	59	5,732,125	3,411,074	3,825,949	10	244,061	77,221	64,570
1923												
January	62	4,695,916	3,127,270	2,994,297	62	5,838,310	3,951,885	3,748,651	11	262,462	83,343	60,611
February	60	5,224,387	3,217,987	2,588,639	60	6,771,958	4,039,202	3,001,697	11	270,191	75,457	63,394
March	58	5,670,601	3,865,726	3,322,637	57	7,740,945	4,875,414	3,828,315	11	265,843	79,788	77,144
April	56	6,088,272	3,539,326	2,976,160	55	8,394,184	4,259,558	3,535,635	11	260,631	71,468	72,609
May	57	6,906,594	3,659,986	2,757,764	57	9,292,223	4,317,537	3,414,115	10	268,323	77,288	67,147
June	55	7,040,600	2,956,943	2,502,185	54	8,924,326	3,590,011	3,581,060	10	283,425	72,445	52,126
July	54	6,471,124	1,992,989	2,539,425	52	7,396,444	2,625,118	3,942,247	10	263,891	42,345	45,219
August	58	6,058,387	2,355,915	2,807,432	53	6,950,578	3,577,922	4,304,034	10	262,810	48,141	45,925

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.
"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.
"Shipments" includes only stock forwarded to a *purchaser* and does not include stock forwarded to a warehouse branch, or on a consignment basis, or abroad.

Compiled by The Rubber Association of America, Inc.

News of the American Rubber Trade

Financial

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Canadian Consolidated Rubber Co.	Pfd.	1¾% q.	Sept. 29	Sept. 22
Corduroy Tire Co.	Com.	$1.00	Sept. 1	Aug. 15
Firestone Tire & Rubber Co.	6% Pfd.	1½% q.	Oct. 15	Oct. 1
General Tire & Rubber Co.	Com.	1½% q.	Nov. 1	.....
Goodrich, B. F. Co., The	Pfd.	$1.75 q.	Jan. 2	Dec. 22
Hood Rubber Co.	Pfd.	1¾% q.	Nov. 15	Oct. 20
Kelly-Springfield Tire Co.	8% Pfd.	$2.00 q.	Nov. 15	Nov. 1
Overman Cushion Tire Co.	Com.	1%	Oct. 25	Sept. 30
Overman Cushion Tire Co.	Pfd.	1%	Oct. 25	Sept. 30
United States Rubber Co.	First Pfd.	2%	Oct. 31	Oct. 15

New York Stock Exchange Quotations

OCTOBER 24, 1923

	High	Low	Last
Ajax Rubber, com.	5¼	5¼	5¼
Fisk Rubber, com.	6¼	6⅛	6⅛
Goodrich, B. F., Co., com.	19	18¼	18¾
Goodrich, B. F., Co., pfd.	71	69½	70¾
Goodyear Tire & Rubber, pfd.	35⅛	35⅛	35⅛
Goodyear Tire & Rubber, prior pfd.	90	90	90
Kelly-Springfield Tire, com.	23	21¾	22½
Kelly-Springfield Tire, pfd. (8)	80	80	80
Kelly-Springfield Tire, pfd. (6)	70⅛	70⅛	70⅛
Keystone Tire & Rubber, com.	2	2	2
Lee Rubber & Tire, com.	12¼	12¼	12¼
United States Rubber, com.	34	33⅛	33⅛
United States Rubber, 1st pfd. (8)	83⅞	82	82¼

Akron Rubber Stock Quotations

Quotations of October 19, supplied by App-Hillman Co., Akron, Ohio.

	Last Sale	Bid	Asked
American com.	7¾	7⅛	10
American pfd.	50	..	40
Amazon com.	2	2½	4
Firestone com.	65	64½	65½
Firestone 6% pfd.	90	..	89
Firestone 7% pfd.	87	87	88
General com.	153	150	155
General 7% pfd.	94	93	95
Goodrich 6½s	98¾	98½	99½
Goodyear com.	9⅛	9	9⅛
Goodyear 7% pfd.	36¼	35	36¼
Goodyear 1st Mtg. 8s	115½	115	116
Goodyear deb. 8s	101¾	101¼	102
India com.	71	70	74
India 7% pfd.	80	78	85
Mason com.	1⅜	1⅛	1⅞
Mason 7% pfd.	15¾	15	17
Marathon	2	..	2
Miller com.	63	60	65
Miller 8% pfd.	95½	90	95
Mohawk com.	6	..	8
Mohawk 7% pfd.	30	35	..
Rubber Products	20	10	20
Seiberling com.	6½	5¾	6½
Seiberling 8% pfd.	35	35	41
Star com.	20	..	25
Star 8% pfd.	80	..	80

New Incorporations

Akron Cord Tire Co., July 25 (Florida), $50,000. G. P. Smythe, president; J. S. Knight, vice president; J. H. Harris, secretary. Principal office, Bradentown, Florida. To purchase, distribute and sell at wholesale and retail, automobile tires, tubes, bathing shoes and caps and similar merchandise.

Arkayar Rubber Products Corporation, September 19 (Massachusetts), $10,000. C. K. Reiman, president; C. B. Russell, vice president; R. G. Knowland, treasurer. Principal office, 88 Broad street, Boston, Massachusetts. To deal in rubber products.

Cigol Rubber Novelty Manufacturing Co., October 17 (New Jersey), $100,000. F. A., A. M., and K. L. Cigol. Principal office, 586 East 41st street, Paterson, New Jersey. To manufacture all kinds of articles and novelties of rubber and other materials.

Consolidated Tire Corporation, October 3 (New York), $20,000. A. M. Levy; I. C. Robb; M. Boghasian, all of 1755 Broadway, New York City. To manufacture rubber tires, tubes, etc.

Crush Tire Co., May 16 (Kentucky), $1,500. W. G. Crush, president; F. W. Curran, secretary; R. H. Gast. Principal office, 739 East Broadway, Louisville, Kentucky. To deal in tires, tubes and accessories.

Emery Rubber Specialties Corporation, September 25 (Massachusetts), $150,000. E. J. Emery, president and treasurer; S. W. Culver; E. K. Buckley. Principal office, Boston, Massachusetts. To manufacture all kinds of rubber goods.

Fowler-Anderson Co., October 1 (South Carolina), $75,000. W. J. Fowler, president; J. M. Anderson, secretary; L. H. Childs, treasurer; J. M. Anderson. Principal office, Columbia, South Carolina. To deal in tires, and accessories.

H. & M. Tire & Rubber Co., September 11 (New Jersey), $25,000. G. Hennig; H. C. Barnwell; R. A. Mueller. Principal office, 320 Commercial avenue, New Brunswick, New Jersey. To manufacture solid truck tires, pneumatic tires, cord tires, casings and automobile accessories.

Kelley Battery & Tire Corporation, F. W., October 16 (New York), 500 shares, no par value. F. W. Kelley; C. J. Lewis; M. K. Boynton, all of 108 South Clinton street, Syracuse, New York. Principal office, Syracuse, New York. To deal in tires, and accessories.

Kennedy's of Salem, Inc., September 26 (Massachusetts), 500 shares no par value. J. White, Jr., president; F. J. Kennedy, treasurer; W. J. Kennedy. Principal office, Salem, Massachusetts. To manufacture and deal in rubber goods.

Kirchner Tire Co., W. A., August 7 (Minnesota), $100,000. H. E. Schwerdt, president; E. F. Swendson, vice president; W. A. Kirchner, secretary and treasurer. Principal office, Duluth, Minnesota. To carry on a retail and wholesale tire business.

Maranville Sales Corporation, August 9 (Ohio), $25,000. H. F. and C. H. Maranville; C. E. and J. H. Willis. Principal office, Akron, Ohio. To buy, sell and deal in rubber specialties of all kinds.

Mason Tire & Repair Co., July 25 (South Carolina), $10,000. F. E. Condon, president and treasurer; J. P. Condon, vice president and secretary. Principal office, Charleston, South Carolina. To deal in tires.

Millard Rubber Co., Inc., October 10 (New York), $20,000. W. F. D. Noble, 200 West 86th street; E. T. Manning, 11 West 68th street; C. Kisselhof, 1059 Tiffany street, all of New York City. To manufacture rubber goods.

Miller Rubber Company of New England, September 19 (Massachusetts), $75,000. N. P. James, president and treasurer; L. G. Brown; L. A. Gleason. Principal office, Boston, Massachusetts. To manufacture and deal in automobile tires and tubes and any article consisting wholly or partly of rubber fabric, cotton, linen, their compounds or substitutes or other similar substances.

Missouri Rubber Products Co., Inc., September 17 (Delaware), 50,000 shares, par value $25.00, 125,000 shares of common stock with nominal or par value. T. L. Croteau; F. R. Bogart; A. M. Hooven, all of Wilmington, Delaware. Delaware agent, Corporation Trust Company of America, DuPont Building, Wilmington, Delaware. To manufacture and deal in tires and tubes.

Thornam Tire Corporation, August 20 (Missouri), $10,000. C. A. Thornam, president and general manager; H. M. Gillman, vice president; G. M. Smith, secretary; P. H. Reis, treasurer. Principal office, 1515 Olive street, St. Louis, Missouri. To distribute tires and tubes.

Ticoda Manufacturing Co., September 17 (Delaware), $150,000. A. A. Tirrill; A. Cohen; C. E. Davis, all of Pittsburgh, Pennsylvania. Delaware agent, Capital Trust Company of Delaware, Dover, Delaware. To manufacture and sell automobile tires with detachable cross chains.

Tire Seal Manufacturing Company of California, September 26 (Delaware), $2,000,000. F. R. Bogart; M. A. Bruce; A. M. Hooven, all of Wilmington, Delaware. Delaware agent, Corporation Trust Company of America, DuPont Building, Wilmington, Delaware. To manufacture and deal in rubber, cork, gutta percha and other compounds.

Tobe Manufacturing Co., September 19 (Delaware), $100,000. L. Tobe, 3110 Niagara street; M. Feitler, 924 Mellon street, both of Pittsburgh; G. C. Murphy, Sewickley, all of Pennsylvania. Delaware agent, Capital Trust Company of Delaware, Dover, Delaware. To manufacture heels of rubber or any other substance.

Tucker Rubber Corporation, October 3 (New York), W. F. Timme, 593 Riverside Drive, New York City; J. W. Aymar, Jr., 208 Watchung avenue, Upper Montclair, New Jersey; J. T. Wardner, 239 Bedford avenue, Mount Vernon, New York. Principal office, Buffalo, New York. To manufacture rubber goods.

United Rubber Machinery Exchange, August 31 (New Jersey), 25,000 shares no par value. S., A. and M. J. Liebstein, all of Newark, New Jersey. Principal office, 49 Marshall street, Newark, New Jersey. To buy, sell and deal in new and old machinery, rubber, woolens, rags, mill supplies and all kindred products.

The Rubber Trade in the East and South

Manufactured Goods

Rubber manufacturing conditions are excellent in certain lines and up to average in most others. Factories are cautiously avoiding making contracts for future requirements for rubber and fabrics in view of their experiences in recent years.

Tire production is going steadily forward at a relatively slower pace than automobile production in view of the ample tire cushions now in stock throughout the country. Tire prices are as low or lower than they have ever been in the history of the industry. Tire consumers may well be satisfied with present tire prices and tire service quality. On the other hand, manufacturers are not receiving a fair profit.

In mechanical goods lines buying on the part of the railway companies has not developed in marked degree recently. The factories are all fairly busy on a competitive basis. Brake lining trade is a bright spot, however, due to the fact that the general introduction of the four wheel brake doubles brake lining requirements.

Heel production, following the set-back of three months of strikes in the leather footwear trade, is beset with cut rate prices rivaling in seriousness those in the tire trade. Heel output is curtailed about 40 per cent below capacity. Bright colored heels for ladies' shoes are not yet much in evidence.

Hard rubber manufacturers are operating very actively especially in the production of battery jars and radio parts. The hard rubber requirements of leading electrical instrument manufacturing companies are furnishing volume production in standard lines to makers able to meet the specific conditions of quality.

Rubber footwear plants are working on full tickets for winter goods. The manufacture of fancy colored bathing and sport shoes is said to have been overdone and proved a source of loss to those who engaged in it unqualified by shoe manufacturing experience. Insulated wire mills are reported to be well supplied with orders for wire for building construction and signal work. Cables for light and power purposes are also in good demand. Automobile topping trade is active in meeting the needs of the current machine output for the 1924 season. Weatherproof clothing and spread goods manufacturers are well engaged as are also those who make druggists' sundries, dress shields, etc.

The Continental Rubber Works

Another addition to the plant maintained by the Continental Rubber Works, Erie, Pennsylvania, is now in course of construction, the new building furnishing much needed floor space. The company was organized in 1903, and, with the increase of business, earlier additions were necessitated in 1913 and 1916.

For the past ten years "Vitalic" bicycle tires and automobile casings, of both cord and fabric construction, have been produced,

Continental Rubber Works, Erie, Pennsylvania

as well as the "Vitalic" line of automobile accessories. The plant output also includes a varied assortment of high grade hose, molded rubber specialties, diaphragms, gaskets, etc.

With the exception of the office of the secretary and assistant treasurer, the list representing the company's executive personnel remains unchanged since the organization in 1903, and now includes: Theron R. Palmer, president and general manager; Alexander Jarecki, vice president; Albert E. Caldwell, secretary; Charles S. Coleman, treasurer; and Herman M. Reinecke, assistant treasurer.

New York

The Motthaven Sales Co., 279 East 139th street, New York, N. Y., has again renewed its contract as distributor of the "Quality" tires manufactured by the Braender Rubber & Tire Co., Inc., Rutherford, New Jersey. An additional salesman has been appointed at this branch.

S. H. P. Schall, for over thirty-five years connected with Gabriel & Schall, has recently organized the Schall Color & Chemical Co., with offices at 80 William street, New York, N. Y. The new company will handle colors and chemicals used by the rubber industry.

The concern formerly known as the Beacon Tire Co., Inc., Beacon, New York, has been recently purchased from the receiver, and a new company, under the name of the Beacon Tire & Rubber Corporation will carry on the business. The manufacture of the "Beacon" and "Nomad" brands of tires, as produced by the old company, will be continued. J. H. Phillips is general manager.

The National Exposition of Power & Mechanical Engineering to be held in Grand Central Palace, New York, N. Y., December 3-8, will have among its exhibitors, the American Chain Co.; American Schaeffer & Budenberg Corp.; Bristol Co.; Falk Corporation; Peerless Machine Co.; Pittsburgh Valve, Foundry & Construction Co.; Smith & Serrell; Yarnall-Waring Co.

John L. Handy, crude rubber broker, 120 Broadway, New York, N. Y., is the exclusive representative of Francis Peek & Co., Limited, of London, Singapore, Medan, Batavia and Sourabaya.

R. W. Greeff & Co., Inc., 78 Front street, New York, N. Y., specializing in chemicals and solvents for the rubber industry and particularly in the accelerator Quinoidine, report that, following factory extensions necessitated by increased demand for the last-mentioned product, the price of this accelerator has been reduced.

On September 5 receivers in equity were appointed for the New York Rubber Co. by Judge Bondy in the Federal Court of New York. The appointment was made under proceedings instituted by A. D. Juillard & Co., a creditor of the company. The assets of the organization were listed at $1,003,160, and liabilities at $225,849. James G. Meyer and George W. Retz were appointed receivers under bond of $50,000. Various plans are being considered for the reorganization of this company, which has been carrying on operations since 1850.

Frank R. Barnwell has been appointed general sales manager of tire fabric sales by the Manville-Jenckes Co., with headquarters in New York, N. Y.

The Syra-Cord Tire & Rubber Corporation, Syracuse, New York, manufacturer of "Syra-Cord" tires and tubes, states that C. T. Anderson has been recently made director of sales of the organization, while J. B. Losey, treasurer of the company, has also been elected general manager as well. Business conditions, as reported at the company's recent sales conference, are said to be excellent.

L. C. Pierson, formerly a member of the New York City sales force of the Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y., has been recently appointed manager of the branch at Albany, New York.

Pennsylvania

Executives of the Rex-Hide Rubber Manufacturing Co., East Brady, Pennsylvania, report that Enos H. Baker has been recently made sales manager of their company.

The business formerly carried on by the organization known as the Eclipse Cement & Blacking Co., Philadelphia, Pennsylvania, has been liquidated, and a new concern, made up of some of the employes of the old company, is continuing operations under the name of the Puritan Cement & Blacking Co. Having a well-equipped factory, the new organization will continue to specialize in the manufacture of shoe polishes, leather and rubber cements, etc. Sherman R. Read is treasurer.

The Merion Magnesia Co., Port Kennedy, Pennsylvania, has taken over the property and plant of the Valley Forge

Magnesia Co., and intends enlarging it to about double its present capacity. Until these improvements have been completed the Merion plant will remain closed. B. F. Bean is secretary.

The directors of the Lee Tire & Rubber Co., Conshohocken, Pennsylvania, have passed the regular quarterly dividend of 50 cents, due in October. Reasons for this were given in a statement following the meeting, when it was claimed that conditions in the tire industry necessitated a conservation of the company's resources.

Eastern and Southern Notes

The Baumann Rubber Co., New Haven, Connecticut, is engaged in the manufacture of bathing caps and bathing robes; aprons; sheeting, and various sanitary garments; infants' specialties; and various rubber novelties. D. A. Lederer represents the organization.

Frank B. Byron, formerly a member of the New York City sales force of the Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y., has been recently made manager of the company's branch at Hartford, Connecticut.

The Raley Rubber Co., Inc., Riverton, Connecticut, is engaged in the manufacture of medicine droppers, nipples for nursing bottles, and pacifiers. H. B. Raley heads the organization.

L. N. Ericson, formerly manager of the branch at Hartford, Connecticut, maintained by the Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y., has been recently placed in charge of the company's branch at Atlanta, Georgia.

The Rubber Trade in New Jersey

Manufactured Goods

There has been a decided decrease in the production of hard rubber goods in Trenton and vicinity, and some of the plants have been compelled to reduce working forces. The Joseph Stokes Rubber Co. reports slack business and has curtailed production somewhat. Other concerns manufacturing hard rubber articles are also feeling the effects of business depression. The market for radio supplies has dropped during the past month and orders are slow in coming in.

Tire factories are also hard hit at the present time, the production being greatly cut as early winter approaches. One concern found it necessary to reduce its working force to one shift after having operated sixteen hours a day. The recent cut in prices by a large western tire concern has had a bad effect on the Trenton factories. Many of the larger cities are now buying fire hose and this keeps up the mechanical end of the rubber business. The belting and packing departments show no signs of a let-up and this end alone is a big asset to the business at this time.

Asbestos Brake Lining Decision

The agreement between the Asbestos Brake Co. and the Thermoid Rubber Co., Trenton, and the Johns-Manville Co., Bound Brook, has been declared valid, the New Jersey Court of Errors and Appeals having affirmed the decision of Vice-Chancellor Buchanan. The court also held that the two latter companies must make an accounting for royalties at the rate of 10 per cent on all sales of brake linings and brake band linings since 1911. Under an agreement the Asbestos company granted licenses to the Thermoid and Johns-Manville companies to manufacture and use asbestos brake linings, covered by patents. The plaintiff claimed that no reports nor any payments of royalties had been made and asked that the two companies be compelled to make an accounting. It was argued by the defense that the agreements are part of a combination in restraint of trade, in contravention of the Sherman anti-trust act and that they are therefore void. The highest court in the state now closes the case in so far as the New Jersey courts are concerned.

Trenton

The Rubber Manufacturers' Association of New Jersey held its first meeting of the fall and winter season on October 15 at the Stacy-Trent Hotel. Various phases of the rubber industry were discussed after the luncheon. President Charles E. Stokes presided.

The Trent Rubber Co., which has been operating with two shifts of tire and tube makers, is now operating with but one shift. Although the production has been cut in half the company officials announce that business has been better than last year.

The Ajax Rubber Co. hopes to increase production soon, after experiencing a dull season since the latter part of last July. The company is now operating 60 per cent normal in the tire department, while the tube output remains at 100 per cent.

The Hamilton Rubber Manufacturing Co. is working on orders for rubber fire hose, one city alone having let a contract to the concern for 35,000 feet.

Whitehead Brothers Rubber Co. announces that business continues good. The company specializes in belting, packing and hose and has not yet found it necessary to lay off any help.

The Globe Rubber Tire Corporation has increased the production of tubes and has found it necessary to dispense with the services of some tire makers. John S. Broughton, who was made head of the concern following the reorganization of the United & Globe Rubber Co., has resigned the presidency and is again affiliated with the United & Globe company in an advisory capacity. Mr. Broughton recently returned from a business trip in the West, where he found the mechanical end of the business very encouraging.

The Crescent Insulated Wire & Cable Co. has laid off some help during the past month.

The Luzerne Rubber Co., manufacturers of hard rubber goods exclusively, announces that the plant is being operated at about 75 per cent normal.

Sydney J. McCabe has recently resigned as treasurer of the Pocono Rubber Cloth Co., Trenton, New Jersey, his successor being Holland B. Slusser, who as vice president has been with the company since its incorporation. The production of motor topping and rubberized fabrics, in which the Pocono company specializes, has been at its maximum throughout the summer, while the fall business promises to be the best since the concern's entry into this line of work. T. S. Cart is secretary.

Several Trenton rubber manufacturers have been selected by Mayor Donnelly as delegates to the annual convention of the Atlantic Deeper Waterways Association to be held from November 13 to 16 at Norfolk, Virginia. Those named were John A. Lambert, Acme Rubber Manufacturing Co.; A. B. Cornell, Hamilton Rubber Manufacturing Co.; Charles E. Stokes, Home Rubber Co.; Clifford H. Oakley, Essex Rubber Co.; C. Edward Murray, Jr., Murray Rubber Co.; Thomas H. Thropp, Trent Rubber Co., and John T. Spicer, Thermoid Rubber Co.

New Jersey Notes

Articles of incorporation have been filed by the Enterprise Rubber Co., of Yardville, on the outskirts of Trenton. The company has an authorized capitalization of $100,000 and will engage in the manufacture of druggists' sundries. The incorporators are Leo McCue, Jeanne E. Catana, and John Masich, all of Trenton. J. Irving Davidson is the agent in charge.

The plant of the Boonton Rubber Co., Boonton, was badly damaged by fire recently. The main buildings were saved but a structure 200 by 30 feet in size and containing new machinery for the making of soft rubber and considerable stock was burned. The loss is covered by insurance. It is believed that the fire was caused by sparks from a railroad locomotive.

The Lambertville Rubber Co., Lambertville, had a modern exhibit at the Trenton State Fair, occupying a large space for the display of "Snag-Proof" boots. C. C. Alexander, sales manager, Fred Cummings and Frank Eames were in charge of the booth, while John Stout was engaged in showing the fair patrons how boots are made. At the Syracuse, N. Y., fair, D. W. Neish and E. J. Glasgow, salesmen representing New York state, were in charge of the booth.

B. DeMattia

Barthold De Mattia, head of the organization known as De Mattia Bros., Garfield, New Jersey, manufacturers of core chucks and cores as well as molds and other tire building equipment, started recently on an extended trip through the West where he will visit the principal manufacturing centers of the West, Northwest, and California. The De Mattia organization, established in 1909, continues to maintain its high standards of workmanship, and keeps closely in touch with the latest developments in tire manufacture.

J. B. Bleiler has been recently appointed general sales manager of the Howe Tire & Rubber Corporation, New Brunswick, New Jersey, while R. T. Christy becomes advertising manager.

The Jersey Rubber Co., 10 Ames avenue, Rutherford, has been incorporated with $25,000 capital to produce and buy crude rubber, gutta percha and substances used in the manufacture of rubber goods. The incorporators are Thomas A. Farrell and Annie E. Farrell, of East Rutherford, and William H. J. Ely, of Rutherford. Two thousand of the capitalization has already been subscribed.

The Gibraltar Rubber Corporation, 13th street and Hudson County Boulevard, West New York, New Jersey, has resumed

Plant of the Gibraltar Rubber Corp.

operations, specializing in washing and milling crude rubber and supplying unvulcanized compounded rubber. Charles Cholerton, Jr., is president.

The Cigol Rubber Novelty Manufacturing Co., 586 East 41st street, Paterson, has been incorporated at Trenton with $100,000 capital, to produce all kinds of novelties in rubber, metal and fabric. Following are the stockholders: Frank A. Cigol, Anna M. Cigol, and Robert L. Cigol, all of Paterson; Elide Zeliff, Totowa, and Ludwig Dalla Villa, West Paterson.

A permanent receiver is being sought for the Newark Rubber Products Co., 63 Hoyt street, Newark, application having been made to Vice-Chancellor Church by James A. Whitman, of Bloomfield, a director of the company. Frederick W. Dodge is now functioning as custodial receiver. According to the bill the corporation suspended some time ago for lack of funds, having done but little business for some time. The assets amount to $22,000 and the liabilities $22,400.

The Acme Cushion Wheel Corporation, a new concern, has purchased a two-story building at Asbury Park for an assembling plant. The purchase price was about $50,000. The company intends to produce 200 cushion wheels a day. The construction of the wheel centers around a hub revolving around a rubber ring to absorb shock.

The Rubber Trade in Rhode Island

With few exceptions, the manufacturing rubber concerns throughout Rhode Island are manifesting a disposition to curtail production, especially those plants that produce footwear. The long continued dry weather conditions which have prevailed in practically all sections of the country have resulted in a noticeable falling off in orders, with the consequent piling up in the factories of stocks that must be moved before there can be further active operations in these departments. There has also been some easement in the drive in the factories producing automobile tires and this has been passed on to the textile plants that produce tire fabrics. Concerns having sundries departments report good demands in special and standard lines.

The "Keds" shoe division of the National India Rubber Co. at Bristol, employing 3,100 hands, began on a four-day schedule October 8 and will continue on this card until inventories of manufactured goods on hand have been substantially reduced. This represents a curtailment of approximately 60 per cent of normal production. Announcement has also been made by the management that it is planned to close the plant on December 13 and reopen January 2, during which period some of the departments are to be transferred to facilitate work in the shoe division. The wire division, employing about 300 hands, will operate on an eight-hour day schedule for four days a week until further orders.

In accordance with notices posted in the Millville Rubber Co., of the Woonsocket Rubber Co., the plant on October 8 began working on a five-day week schedule, which will be continued until further notice. Manager Harry Marlow said that he was uncertain how long the Millville plant would run on the five-day schedule. He attributed the closing to a lack of orders, caused by the dry weather of the past few months. With the first fall of snow, Mr. Marlow is of the opinion that the plant will speedily resume its regular running time. At the Alice Mill in Woonsocket, another of the Woonsocket Rubber Co.'s plants, the information was given that the plant would continue on its present schedule of 5½ days per week.

At the plant of the Davol Rubber Co., Providence, practically all of the departments are working on full time schedules, and the company finds it necessary to increase its facilities notwithstanding the additional room that has been taken on in the last couple of years. A permit has just been granted by the Inspector of Buildings for the erection of a three-story brick manufacturing building on South street adjoining the plant of the company. It is to be 115 feet by 170 feet and will afford a very material extension to the company's plant. Work is to be commenced at once so that occupancy can be had at the earliest possible time.

Former Governor Augustus O. Bourn, treasurer of the Bourn Rubber Co., Providence, observed his 90th birthday anniversary on October 1, when he was the recipient of a silver vase and an easy chair, gifts of employes of the concern. Charles F. Benz, who has been in Mr. Bourn's employ since 1853, made the presentation. In addition, Mr. Bourn received floral tributes, among them a bouquet of 90 American Beauty roses, from various departments of the plant. Mr. Bourn has been prominent for many years in the rubber world, a distinction that won him the title of "the Grand Old Man" of the industry.

A decree was entered by Presiding Justice Tanner in the Superior Court for Providence County early this month which practically completes the reorganization of the American Wringer Co. of Woonsocket. This decree allows the final account and discharge of the receiver and the dissolution of the old corporation. Harry A. Webster has resigned as head of the engineering department of the company, which he has held for the past five years and intends to take a much needed rest before accepting one of several positions that are open to him.

Albert E. Sparks, Jr., who for several years has been on the office staff of the National India Rubber Co., at Bristol, has resigned to accept a position in Cleveland.

The Rubber Trade in Massachusetts

Manufactured Goods

Early autumn cool weather has inspired retailers to prepare early for the rubber footwear season. Manufacturers are busy on orders for four-buckle gaiters and galoshes, and retail stocks of these arctics and Russian boots are already said to be larger than in recent years at this time. The long continued drought has affected the demand for rubbers. These and other reasons explain in part the short working schedules in certain footwear factories. Heel and sole production is satisfactory, the off season for crêpe soles now beginning. The production of rubber heels to match shoes of various colors is stimulating that branch of the business and doing much to popularize rubber heels among women.

Tire production is being greatly curtailed, automobile topping demand continues to fall off, and weatherproof clothing business remains poor because of the long continued dry weather. The hard rubber trade shows some decline, while mechanical goods production is spotty as regards various lines. The building boom in Massachusetts continues with its demand for insulated wire.

A Rubber Spot Market Projected for Boston

The United States Government has put the issue up to Boston, Massachusetts, as to what should be done with the Army Base pier at South Boston, and the Boston Chamber of Commerce suggests its use as a spot market for coffee, cocoa and rubber, all tropical products of which the Boston district is a heavy importer and consumer. Largely through the efforts of the Maritime Association of the Boston Chamber of Commerce, the direct imports of all three products through the port of Boston are far greater than they were three or four years ago.

The Boston Woven Hose & Rubber Co.

The annual report of the Boston Woven Hose & Rubber Co., Boston, Massachusetts, for the year ended September 1, 1923, showed plant assets at $3,580,511.11 and total current assets at $3,908,131.92, a total of $7,689,810.58. Total current liabilities were estimated at $896,553.17; reserve for future depreciation at $203,592.94 and surplus as being $1,539,664.47.

In the statement submitted by George E. Hall, president and general manager, mention is made of the company's gross sales for the year, which amounted to $10,814,375.90, an increase of 14.7 per cent over the amount for the year previous, or $9,431,887.90. An increase also in the poundage produced represents an index of the company's prosperity, a total poundage for 1923 of 39,102,789, as compared with 31,899,348 for the year 1922, showing a gain in factory production of 22.6 per cent. Mr. Hall stated that he believed that during the coming year not only volume of business would be maintained but that profits would be materially increased.

Boston

The movement initiated by manufacturers and dealers in rubber footwear to encourage gaiters, arctics and other boots for winter wear as appropriate Christmas gifts is already bringing good results. The George H. Wirth Co., high retail shoe merchants in Boston, have been selling four-buckle overshoes since about the middle of September, owing to a window display of gaiters initialed in yellow silk embroidery and a circular letter to regular customers urging early orders so that the initialing may be done.

Godfrey L. Cabot, dealer in carbon black, and dean of the United States Navy air pilots during the war, attended and participated in the annual convention of the National Aeronautic Association held at St. Louis, Missouri, from October 1 to 3 in connection with the international air races. He not only presented New England aviation problems at the convention but demonstrated in several long-distance flights the apparatus he has invented for picking up moving objects while in full flight. Mr. Cabot is a member of the board of governors of the Association and was for six years president of the Aero Club of New England.

New taxicabs known as "Baby Shaws" and equipped with a rubber spring have made their appearance in Boston. This flexible spring, set between solid plugs of rubber, is the latest device intended to lessen the bumps of a cruise over the cobblestones. About 125 cabs belonging to three different companies are now equipped with them. Due to the resilience of rubber, the new springs really present a spring within a spring. They are easily detachable and may be replaced in half an hour.

An effort is being made by the Board of Aldermen and the Chamber of Commerce of Malden to persuade the Boston Elevated Railway to equip its jitneys operating in Malden with pneumatic tires. Traffic manager Lindell has recommended to the trustees that four buses be equipped with pneumatic tires and four with semi-pneumatics in order to determine which is better.

New rubber goods concerns in Boston include the Gillies Rubber Specialty Co., 80 Boylston street, and the Triangle Rubber & Supply Co., 719 Atlantic avenue, dealers in hard and soft mechanical rubber goods.

The Republic Rubber Co., 825 Boylston street, is seeking to greatly increase its business here by an aggressive sales campaign under the direction of Guy D. Niles, district manager.

The Emery Rubber Specialties Corporation has been incorporated in Boston with a capital of $150,000. The incorporators are Elias J. Emery, Lynn; Elizabeth Buckley, Lexington; and Samuel W. Culver, Winthrop.

Ceylon Rubber Products, Inc., 166 Essex street, is the style of a company recently organized to act as exclusive selling agents in the United States and Canada for the Mayow patent crêpe rubber sole, manufactured in Ceylon, for the development of which a substantial prize was paid by the Rubber Growers' Association, of London, England. To insure prompt deliveries to the shoe trade an adequate stock will be carried in Boston.

Massachusetts Notes

The Hood Rubber Co., Watertown, through its real estate subsidiary, the East Watertown Realty Co., has purchased the property of the Union Carpet Lining Co., on Arsenal street, Watertown. This gives to the company more than half a mile of frontage on that street and about five and one-half acres of additional land for plant expansion. The property consists of factory and storage buildings and 233,191 feet of land, with a ten-car side track on the Boston & Maine Railroad. The assessed value is $144,400, of which $105,400 is on the buildings.

The Fisk Rubber Co., Chicopee, has adjusted its accounting to the seasonal character of the tire industry and will hereafter close its books on September 30, when production usually slows down rapidly and plans are made for the following year. The Fisk plant has been running lately at about 55 per cent capacity, rated at 22,500 tires daily. Further curtailment is expected shortly as in all other tire plants. For the nine months ended September 30 net earnings are expected to be about $2,000,000 after interest, amorti-

zation, etc., or about $10.50 a share on the $18,951,000 preferred stock. Dividends on this issue have been suspended since May, 1921. In the first half-year the company earned over $1,700,000 for the stock after setting aside a contingency reserve of $500,000.

The Beaver Mills, North Adams, Massachusetts, manufacturers of tire fabric, are now running on a full time basis, although production is not being maintained in certain departments. J. R. Killian is superintendent.

The Rubber Trade in Ohio

Manufactured Goods

Survey of rubber manufacturing conditions in the Ohio district shows that the majority of factories are steadily producing at about half their capacity and peak output.

Applied to tires this rate indicates that 55,000 tires are being made daily in the Akron district and 12,000 in the state outside. The unfortunate feature of the situation is that tire prices have been reduced to the point where the manufacturers' profit is seriously threatened and the business of the small manufacturer seriously imperiled. Anticipating present competitive struggle for volume business most of the tire companies are marketing second and, in some cases, third grade tires. The phenomenal development of tire construction and machine tire building makes it possible for such tires to rival or even outrank in mileage service the best grades of tires as built a few years ago.

The present tire surplus in the Akron district is believed to be about 3,000,000, while the national surplus is estimated at 8,000,000. This "cushion" between maker and user is perhaps 30 per cent larger than need be. It is evident that our tire manufacturing capacity is considerably in advance of tire consumption. This condition leads to keen competition for volume sales at minimum profit and ultimate disaster to those who cannot maintain the pace.

Trade in other rubber lines accessory to automobile manufacture, such as topping and molded goods, is prosperous. Heel production is at about two-thirds capacity and is more closely competitive than tires.

Supply of skilled rubber workers in the Akron district is believed to be ample. The Akron plant of the Kelly-Springfield Co. has been started recently, which will shortly afford work for about 1,000 operatives without necessity of overtime.

Republic Rubber Co.'s New Sales Plan

New sales plans, as formulated by E. H. Fitch, president of the Republic Rubber Co., Youngstown, Ohio, include close cooperation between the factory and Republic certified dealers in various sections of the United States, the Republic company guaranteeing that these dealers will render efficient service. While under new conditions Republic branch offices have also been practically eliminated, warehouses are to be established throughout the country at certain strategic points.

The company's solid tire division is operating night and day, production showing an increase of 200 per cent over that of 1922. The output of the pneumatic tire department is now 1,000 casings a day, sales during July and August being 85 per cent greater than production. An increase of 60 per cent over that of 1922 is also shown in the department devoted to the manufacture of mechanical rubber goods, where some new features have been recently added. These include rubber flooring (mats and rugs) and other specialties for automobile manufacturers and body builders.

Activities of General Tire & Rubber Co.

That business continues to be satisfactory is the report of The General Tire & Rubber Co., Akron, Ohio, the production and sales trend having been steadily upward ever since the slump following the war. For nearly three years not a single General tire employe has been laid off, the policy of the company having been one of underproduction rather than overproduction. At no time during this period has there been an overstock, and therefore the company's dealers have not had to combat price competition on General tires. The organization is also not affected by the ups and downs of new car sales, as it makes no tires for car manufacturers but does all of its business with the car-owning public through dealers in the principal centers. Prospects for the company's future are said to be most encouraging.

Akron

The recently organized Dugan & Mason Co. are maintaining offices at 109 North Union street, Akron, Ohio, and are selling crude rubber, fabrics, accessories, chemicals, etc. F. F. Dugan and C. L. Mason constitute the firm.

New machinery has been recently installed and solid tire production has been doubled at the plant of The Swinehart Tire & Rubber Co., Akron, Ohio, due to the demand for the company's line of tires known as "Sturdy Giants." One of the changes in the organization's executive personnel is the appointment of Robert Williams as superintendent, succeeding D. B. Neal, deceased.

The Anaconda Zinc Oxide Department of the International Lead Refining Co., East Chicago, Indiana, has since last April been maintaining a branch plant at Akron, Ohio. A second unit is now in course of construction at Akron which when completed will be in charge of F. O. Case, as the company's local representative.

The Rubber Manufacturers' Export Association, Inc., Metropolitan Building, Akron, Ohio, has been recently organized for the purpose of selling in foreign markets the products of several high grade manufacturers who produce different rubber commodities. Primarily the association will deal with the products of manufacturing concerns in Akron, but it is not necessarily confined to the rubber output of that city. In general the members of the organization will be the manufacturers whose products are sold by the company. A. G. Tompkins is president.

The National Aniline & Chemical Co., Inc., 40 Rector street, New York, N. Y., has recently appointed E. J. Boehm western representative, with headquarters at Akron. Mr. Boehm is in charge of the organization's intermediates and certified food colors division.

Recently about one hundred and thirty druggists attending the National Wholesale Druggists' Association Convention held at Cleveland, visited the plant of the Miller Rubber Co. at Akron. The visitors inspected the druggists' sundries and tire production departments. At noon a special luncheon was served in the factory cafeteria, and each visitor on leaving the plant was presented with a souvenir.

N. S. Noble is now the Akron, Ohio, representative of John L. Handy, crude rubber broker, 120 Broadway, New York, N. Y. Mr. Noble's offices are at 513 Second National Building.

Ohio Notes

Bids for the property of the defunct Ideal Tire & Rubber Co., Cleveland, Ohio, were opened on September 22 and 27, the United States District Court accepting the bids of the mortgagee, The National Union Mortgage Co. The first group, comprising the land, buildings and building equipment, was sold for $197,063.67, and the second group, comprising the equipment and other personal property, was purchased at $30,315.00, the mortgagee to assume the accrued taxes.

The factory at Wooster, Ohio, sold early in the year 1922 by the Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y., to the Racer Disc Wheel & Rubber Co., was returned October 1, 1923, through foreclosure proceedings and immediately resold to the Thomas Rubber Co., Millersburg, Ohio. The

selling of the plant by the Kelly-Springfield organization represented part of that company's policy to concentrate all its activities at its newer plant at Cumberland, Maryland.

The Mt. Vernon Rubber Co., successor to The Knox Tire & Rubber Co., Mt. Vernon, Ohio, has been installing equipment in its recently acquired plant and expects to begin operations about December 1. Production will include tires, inner tubes, rubber heels, balloons and possibly some other mechanical and pressed goods items. Executives of the Mt. Vernon company are: W. M. Perkins, president and general manager; J. P. Robson, vice president; George H. Jones, secretary; and W. E. Johnson, treasurer.

The Polson Rubber Co., Cleveland, Ohio, has recently quadrupled its plant capacity by the purchase of the factory formerly owned by the McWade Tire & Rubber Co., Garrettsville, Ohio. In addition to the production of various sundries used as rubber equipment for automobiles, the Polson company will also manufacture the McWade tube and IXL rubber heels, operations at the recently acquired plant beginning about January 1, 1924. Executives of the Polson organization include: H. B. Polson, president; E. T. Moorby, vice president and general sales manager; and C. A. Polson, secretary and treasurer.

R. B. Tracy, formerly sales and advertising manager of the Paul Rubber Co., Salisbury, North Carolina, has recently accepted the position of Eastern representative of the Henderson Tire & Rubber Co., Inc., Goodale Boulevard, Columbus, Ohio.

Following a recent fire at the plant of The Central Rubber Reclaiming Co., Defiance, Ohio, plans were made to maintain production in one of its three units, with the expectation of soon carrying on operations in all departments. President J. F. Schaefer states that repairs are well under way and customers' requirements for reclaim, hard rubber dust, and sheet hard rubber will be taken care of promptly.

The Rubber Trade in the Midwest

Midwest Rubber Manufacturers Association

On October 9 the regular monthly meeting of the Midwest Rubber Manufacturers' Association was held at the Hotel La Salle, Chicago, Illinois, with Thomas Follen, president, presiding. There was a good attendance, and much interest was shown in the reading of the telegraphic communications to the Department of Justice sent on behalf of the Association by Thomas Follen as well as the reply thereto by the Assistant Attorney General. The communication of the latter official stated that attention would immediately be given to the question of the apparent alleged combinations of the leading tire manufacturers following the receipt of a full account of facts evidencing any agreement to fix prices or otherwise restrain trade.

The consensus of opinion of the members present was that while a plan to practically exterminate the smaller manufacturers was evidently being considered, it would be difficult to procure and produce actual and tangible evidence that such a plot existed.

The next meeting of the Association will be held in Chicago on November 13, 1923.

Midwestern Notes

J. Harlam will continue in charge of the branch at Chicago, Illinois, maintained by the Braender Rubber & Tire Co., Inc., Rutherford, New Jersey. F. M. Hutchinson, district western manager for the Braender organization, reports satisfactory conditions in the Middle West, with increasing demand for the company's "Quality" tires.

John E. Spencer, formerly sales manager of the Mechanical Rubber Co. of Chicago, and for the past seventeen years vice president of the Plant Rubber Co., Minneapolis, Minnesota, is now connected with J. W. Love & Co., also of Minneapolis, wholesalers of rubber and leather footwear, rain clothing, etc.

Richard W. Yerkes, formerly general manager at Philadelphia, Pennsylvania, of the branch plant maintained by the Link-Belt Co., 910 South Michigan avenue, Chicago, Illinois, has been recently appointed treasurer of the Link-Belt Co.

H. C. Smith has been recently placed in charge at Milwaukee, Wisconsin, of one of the branches of The Mason Tire & Rubber Co., Kent, Ohio. Mr. Smith will have supervision of the entire Wisconsin territory.

The Voorhees Rubber Manufacturing Co., Jersey City, New Jersey, specializing in hose, belting, packing, valves, automobile tubes and accessories, etc., has recently opened a branch and distributing store at 625 Wayne street, Detroit, Michigan, under the management of D. H. Cassell. At this new distributing center a full line of the company's mechanical rubber goods will be carried, in order to take better care of the trade in Michigan, Northern Indiana, and Ohio.

The Empire Tire & Rubber Corporation of New Jersey, Trenton, New Jersey, organized December 2, 1922, for the purpose of jobbing rubber goods, was recently registered to do business in the state of Missouri, and now has a branch at St. Louis. H. R. Nason is secretary.

The Rubber Trade on the Pacific Coast

Manufactured Goods

In general, conditions in the rubber trade on the Pacific Coast and vicinity continue very satisfactory, but in some lines especially the tire business, there is still much room for improvement. The unit sales show a good percentage increase over the corresponding period of a year ago, and total receipts are fair, but the net profits are not what they might be were makers and dealers in proper accord. Prices on standard Eastern and Midwestern tires are openly cut by branch agencies, not merely to meet competition from coast-made tires but to undersell all rivals.

Many buyers, anticipating lower prices as a result of the sharp competition, are either deferring purchases or are patronizing the numerous gyp retreaded tire dealers, whose business was never as large even when standard tire prices were at their maximum, and the quality of whose wares was never poorer. They are big consumers of retread stock and other rubber repair material, but they are constantly demanding cheaper grades so as to make more profit and also meet competition among themselves.

A lively demand for insulated wire for light, power, telephone, and other purposes has been noted of late in the larger cities on the coast. Activity in building lines and the recent extension on a large scale of hydro-electric operations account for much of the wire demand. Makers of mechanical rubber goods report a well-sustained inquiry for a wide range of such articles; and even the big oil industry in the Southwest which had suffered a temporary setback through overproduction is reviving and calling again for rubber supplies in large quantities. Dealers in rubber footwear and clothing in the Northwest report stock moving well on account of early rains; and jobbers in druggists' and other rubber sundries state that trade is decidedly better than a year ago. In keeping with the strong tone in the automobile market, manufacturers of rubber accessories are finding an active demand for their products. Makers and dealers in rubber belting report sales for the season as above the average.

Recent extension of pulp and paper-making mills in the Northwest has occasioned an increased demand for rubber-covered rolls. The repair and recovering of old rolls is a large item of business with several Pacific Coast rubber mills.

Pacific Coast Golf Tournament

A golf tournament, arranged by the Pacific Coast Mechanical Rubber Men's Golf Association, was held on October 8 and 9 at

the links of the Olympic Club, San Francisco, California. In the final round J. R. McKee, representing the Boston Woven Hose & Rubber Co., succeeded in winning the championship, receiving the Perpetual Challenge plaque offered by his company and also the permanent trophy given by the Plant Rubber & Asbestos Works, of San Francisco. The winner of the first flight, receiving the C. E. Cook trophy offered by The B. F. Goodrich Co., was Milton Sprague, of the Plant company, while T. Degan, of the L. P. Degan Belting Co., received as winner of the second flight the trophy offered by his organization. C. C. Stokefield won the driving contest, while Milton Sprague also carried off the prize for putting. In the tournament twelve mechanical rubber companies were represented.

Fred T. P. Waterhouse Visits Coast Factories

After visiting the leading rubber manufacturers in Akron, Fred T. P. Waterhouse, of Waterhouse & Co., rubber factors, of 82 Wall street, New York, spent the early part of October in renewing acquaintance with many rubber makers on the Pacific Coast, after which he left for Singapore, where he intends to spend the winter.

"Balloon" Tires Favorably Received

Doubtless assuming that conditions are more favorable here for an all-season demonstration, manufacturers of "balloon" tires are sending them in steadily increasing number to the coast cities and sales are reported as good. So far the "doughnuts" are confined largely to 32 x 6 sizes, but other sizes are on the way; and the impression made by them is quite favorable. Dealers say that a brisk advertising campaign will be needed, however, to expedite sales.

San Francisco

A big fire hose order has, after a comparison of many bids, been placed by Los Angeles with the Pioneer Rubber Mills, San Francisco. The hose is to be rubber-lined double, long-staple cotton-jacketed and to stand 400 pounds pressure. The lining, the contract says, must have 45 per cent pure Pará with no old rubber, substitutes, or reclaimed rubber; and all tubing must be of three calendered sheets. On 50,000 feet of 2½-inch hose the price is 65 cents a lineal foot, and on 10,000 feet of 1½-inch hose 42 cents. The smaller lot is to be delivered in thirty days, and the larger hose at the rate of 10,000 feet in thirty days and 5,000 feet every ten days thereafter. The B. F. Goodrich Rubber Co. had also bid 42 cents on the smaller hose.

J. B. Brady, chief in charge of the coast interests of the United States Rubber Co., reports business in all lines as very satisfactory and that a considerable addition has been made in the past few months to the list of distributors. Mr. Brady expects to leave shortly for New York for a consultation with the company executives.

Following the acquirement of the Meese & Gottfried Co., of San Francisco, the Link-Belt Co., 910 South Michigan avenue, Chicago, Illinois, appointed B. A. Gayman to head the new concern, which will carry on business as the Link-Belt Meese & Gottfried Co., San Francisco, California.

Colonel Power, of the Power Rubber Co., San Francisco distributor for the Ajax Rubber Co., Inc., 220 West 57th street, New York, N. Y., and also for the Racine Rubber Co., Racine, Wisconsin, recently visited the rubber factories of the last-mentioned city in the course of an eastern trip.

On November 1 the San Francisco, California, offices of The Goodyear Tire & Rubber Company of California will be moved from 1563-71 Mission street to 450-54 Townsend street. The new quarters are in the wholesale section of the city, and were constructed with a view to meeting the company's requirements. R. H. Daniels is branch manager.

The Keaton Tire & Rubber Co. has enlarged and remodeled its building at 636 Van Ness avenue, San Francisco, to accommodate the growth of business. The company is marketing a new Keaton non-skid cord tire with a unique broad flattened tread.

Los Angeles

Sixteen years ago manager of the Diamond Rubber Company's Southern California branch in Los Angeles, E. M. Smith now not only heads the E. M. Smith Co., manufacturer of rubber belting and many mechanical rubber goods, on Clarence street, but has also established the West Coast Asbestos Co. plant at Downey, California, the Emsco Steel Products Co., Western Forge Products Co., Peerless Pump Co., L. A. Pump Supply Co., and has helped to establish the new Pacific National Bank in Los Angeles. His latest enterprise is the Emsco Tool Co., which is erecting a $1,000,000 plant at Alameda and East 70th street, Los Angeles, for the manufacture chiefly of oil well machinery.

The Lee Tire & Rubber Co. has just moved into its new Los Angeles branch headquarters, 1640 S. Figueroa street, planned by Harry E. Field, vice president, on a recent visit. George Bellis is branch manager, and assisting him are C. M. Stowell, office manager, and R. J. Cox, recently of the Lee Boston branch.

J. B. Magee, Los Angeles branch manager of the United States Rubber Co., expects the company's new building at San Pedro and 8th street, one of the finest of its kind in the West, will be ready for occupancy on January 1. Business in the southwest territory, he reports, shows a marked improvement over last year, the betterment being well distributed through all the company's lines; and three dozen road salesmen are given much of the credit for the good showing.

Vice president and general manager A. F. Osterloh of the Goodyear Tire & Rubber Co., on October 8 was host at the factory in Los Angeles to Manager D. W. Sandford of the Portland branch and his assistants who had won a silver loving cup as a trophy in a contest among the eleven western branches for the largest relative increase in business in July and August over the June record. Portland scored 454 per cent and won the trip to Los Angeles as well as the cup, a banquet, and a sight-seeing trip in the city and environs.

The Eno Rubber Co., 926-930 S. Los Angeles street, Los Angeles, which strengthened its position materially some months ago through a new plan of financing, reports activity in all its departments and business much better than a year ago. The company not only turns out a large volume of mechanicals and repair stocks, but also does an unusually large and varied business in making rubber specialties for inventors.

In order to prepare for an intensive sales campaign, the salesmen and distributors of the products of the Samson Tire & Rubber Co. had a two days' session recently at the company's office in Los Angeles and at the factory in Compton as guests of the president, Adolph Schleicher. A banquet closed the session.

Southwestern Notes

One drawback to cotton raising in the southwest has been the relatively high cost and the uncertainty of labor. Owners of plantations have for years been obliged to depend upon Mexican laborers and for a long time they have been fairly steady workers. Latterly the orchardists in California have, with higher wages, been luring the men away from the cotton fields in Arizona, and the fear of a labor shortage has deterred many southwestern agriculturists from extending their acreage in cotton this year. A remedy may be found for the trouble and an epoch marked in the industry in the importation of colored help from the older cotton-growing states. Already a couple of hundred negroes from Oklahoma cotton plantations have been brought to Arizona, and if the experiment be found to work well, a great many more negroes will be induced to work in the southern fields.

The Rubber Trade in Great Britain

By Our Regular Correspondent

The Agitation for Protection

THE fortunes of the rubber trade, with perhaps the departments of sporting and athletic goods, fluctuate closely with general trade conditions. These are by no means good and the outlook for the winter as regards employment is anything but rosy. This is not the place to enter into a disquisition as to the why and wherefore, but the fact of general slackness cannot be gainsaid and it has resulted in a widespread call from this, that, and the other industry to be protected from foreign competition. On this head we seem to be in for a rather strenuous time, and the position is rendered more acute by the general recognition that though protection may, and no doubt will, raise the cost of goods, this really is much the same thing as paying doles to workpeople out of employment.

The Lancashire cotton trade is in a serious crisis and there are many concerned who wish to invoke government aid, and other textile industries, which have always been in the main wedded to the principles of free trade, say that they cannot now compete with the depreciated currencies of continental producers unless they have some measure of protection.

The position in the tire trade has been referred to on former occasions. No change has yet taken place with regard to the import duties, but support for the demands of the makers is now being obtained from other branches of rubber manufacture.

Speaking of depreciated currencies, there is no doubt that the position of continental exchanges enables certain classes of rubber goods to be brought into England at prices with which our manufacturers cannot possibly compete, and in this way some firms will be hit more than others. However, as evidence that the trade is not in such a very bad way we have the reports of various companies showing a great improvement over those of two years ago, and though one or two have unfortunately gone under, there is no evidence that most of our manufacturers are in a perilous condition owing to foreign imports.

Institution of Rubber Industry

The program of papers for the session 1923-24 covers a wide and interesting range of topics. No doubt, as in many other institutions and societies, the committee has found it a matter of some difficulty to get promises of papers. Presumably this has been the case at Manchester where the program, with these meetings fewer than last session, is not full. A new departure is a joint meeting with the local section of the Society of Chemical Industry, when the analyses of rubber vulcanizing accelerators will be discoursed on by T. Callan. In former years when rubber subjects have been dealt with at the Chemical Industry meetings there has usually been a paucity of speakers. On this occasion, however, it will probably be found quite the reverse, because, independent of rubber works chemists, quite a number of others are interested as so many chemical firms have now gone in for the manufacture of accelerators. Incidentally, the practice of having a joint meeting of two societies is growing, as it usually leads to a larger and more interested audience, and at the same time it helps to solve the difficulty of filling up programs.

This session, in addition to three meetings at Birmingham, there is to be one at Edinburgh, where an attendance seems to be assured if only of the numerous graduate members from the North British Rubber Co., Limited, who figure in the list of members. At the London section a representative of the British Rubber Tire Manufacturers' Association is to read a paper on the subject of a tariff on foreign tires. This ought to lead to an interesting and animated discussion, especially as the association embraces those holding divergent views on the matter.

The fixture, if the term is permissible in the circumstances, for February in Manchester is "Proposed American Night." This is somewhat vague; it may refer to procedure such as turning night into day, or it may be intended to get an American authority to read a paper. A feature of the program is that the same paper is not being given at the different sections as has previously been the case, and this is to be commended because of the full press reports on the occasion of the first reading.

Rubber Pavement and Flooring

At the first meeting of the London section in September Evan J. Edwards read a paper on "Rubber Floors and Rubber Roadways," Francis Hooper, a well known architect, being in the chair. The author contended that in this matter it could not be said that Britain was behind the times, as no other nation had gone so far. Reference was made to the roadway at the Cenotaph in London, and to the roads recently laid in Edinburgh and Glasgow. Credit was taken for the fact that only plantation rubber and no reclaim was used, though there may be no evidence that reclaim is undesirable. One would have thought that with the satisfactory results of the hotel and station approach rubber pavements put down so many years ago the advantages of such pavement hardly now needs the test of time, but the author said that it was unfortunate that so much time must necessarily elapse before any authentic data can be acquired to prove the claim made by rubber manufacturers that rubber pavements are suitable for continuous and heavy traffic. The author's own opinion was that the ultimate economy of such pavement would be clearly demonstrated.

With regard to rubber flooring and carpeting the general advantages were recognized and the only thing affecting its progress was the first costs. Probably the linoleum interests will make every effort to keep up the disparity in price. The discussion was concerned with the problem of getting buyers to pay more for rubber as against other competitive bodies in the assurance that the ultimate cost would be less.

A demand for cheaper rubber pavement was voiced, but no manufacturer rose to give any hope that the demand would be met. A speaker in referring to the size of the blocks used in pavement work said there was much to be said for large slabs reaching from curb to curb and perhaps 20 to 25 feet long, though expansion and contraction under varying weather conditions might be against very large slabs if it should be found possible to manufacture them. In answer to a query about having art critics on the manufacturers' staffs the author thought that the art design of flooring might well be left to the architectural profession.

The Waterproof Trade

The summer which has now come to an end has been largely cold and wet. Great coats rather than macintoshes were required at a much later period than usual and so the season's sales were curtailed. Most of the firms concerned, both weatherproof and rubber proof, have had a trying time and it is matter for congratulation that so few have gone under. The war produced many new firms, which fact, in conjunction with the large stocks thrown on the market by government sales, helped to accentuate the difficulties of the old established firms. Many government goods have been retailed at prices far below cost, a fact which the purchasers have not always recognized, and it is of course out of the question for makers of today to give equal value at the same price, a statement which applies to many other classes of goods. At the same time all efforts are being put forth to reduce the cost of production and we must all hope that something will be effected outside the apparently simple expedient of reducing wages. A

pretty good index to activity is the market quotation for solvent naphtha and the current statement that very little business is being done and that the market is depressed speaks for itself. At 1*s.* 3*d.* per gallon, the price in the Manchester district, there is naturally less tendency to inquire about substitutes or to listen to the blandishments of the recovery plant makers.

It is said that waterproof clothing is not made up so consistently well as formerly and that the prestige of the trade has thereby been injured. There may be something in this, but it is a complaint which is by no means limited to this trade. It is a common remark that workmanship is not up to pre-war standards and that goods do not last so long.

In talking of slackness in this branch it is meant to infer that there is not enough profitable work to go round. It is always the case that some firms are busy, possibly working overtime on particular contracts, while others are very slack. Certain classes of proofing specialized in by some firms may mean busy times for those concerned while other firms may be practically idle awaiting their turn of fortune's wheel.

Trade Notes

The old established rubber works of R. W. Stewart & Co., Limited, Elgin Works, Dunfermline, Scotland, has been registered as a private limited company with the nominal capital of £100,000, the first directors being H. R. Stewart, R. Robertson and R. Morris, all of that Fifeshire town. A large variety of rubber goods is manufactured.

C. H. Saunders has joined the Leicester Rubber Co., Limited, as a director and should be an accession of strength with his long experience. Commencing with Capon Heaton & Co., Limited, of Stirdley, near Birmingham, he was later for some time manager of the Gorton Rubber Co., Manchester, removing thence to the Wermeth Rubber Works, now removed to Burton-on-Trent. The evolution of this company from a very small concern to one of importance testifies to Mr. Saunders' ability.

The report of the Leyland & Birmingham Rubber Co., Limited, for the year ended June 30, shows a trading profit of £83,809, which the amount brought in, less depreciation and other reservation, leaves £90,791 for disposal. The ordinary dividend is 10 per cent for the year—£7,000 is added to the reserve account and £30,791 is carried forward. This report must be considered as very satisfactory when the loss of £20,014 in 1920-21 is borne in mind. During the present year additions have been made to buildings and plant at Leyland and branches.

Non-Oxidizing Insulating Material

This is the subject of a recent patent by Willoughby S. Smith, who mixes gutta percha or the like with coal tar pitch or gas tar pitch from which the free carbon has been removed. The removal of the carbon is effected by dissolving the pitch in toluol and evaporating the solution in a vacuum after filtration. The proportions recommended are two parts of the deresinified gutta percha, balata, or other gum and one part of the purified pitch, and it is stated that the usual oxidation of the gutta percha is largely prevented. The insoluble matter in most if not all pitches, which usually is called free carbon, is really a compound body and not free carbon, but there can be little doubt that its removal increases the value of a pitch for many purposes.

WESTINGHOUSE RECEIVES LARGE ORDER FROM JAPAN

Orders recently received by the Westinghouse Electric International Co. for reconstruction work in Japan amount to over a million dollars, while other orders in course of negotiation will bring the total to approximately two million dollars. It is understood that the power plants in the earthquake zone were not seriously damaged but that the distribution systems were practically destroyed.

The Rubber Trade in Europe

By Our Regular Correspondent

Belgium

The province of Antwerp affords a good market for rubber-soled canvas footwear, of which it is estimated from 30,000 to 50,000 pairs are sold in a year. This class of footwear is chiefly used by school children in their gymnastic classes and by young people up to 22 years for tennis and in gymnastic societies. There are 29 such societies with 5,000 members besides other athletic societies with a larger total membership. Working men and girls also use such shoes, and families going to the seashore in summer buy them to wear during their vacation. Only low cut styles are worn, the three types popular in Antwerp being ordinary molded rubber-soled canvas shoes with the sole vulcanized to the uppers, tennis shoes with stitched rubber soles, and shoes with plantation crêpe soles.

France

Société anonyme des talons Wood-Milne has been formed with a capital of 2,500,000 francs.

Switzerland

Automobile tire imports come under the head, "Pneumatic Tires and Hose Containing Textile or Metal." The source of tires now entering Switzerland can be determined from the figures under the above heading for imports during the first six months of 1923. Thus 291.2 metric tons came from Germany, 284 metric tons from France, 97 metric tons from Italy, 42.1 metric tons from Belgium, 36.6 metric tons from the United States, 8.4 metric tons from Great Britain, 1.1 from Austria and 4.2 from other countries, a total of 764.6 metric tons. (Metric ton equals 2,204 pounds.)

Norway

In proportion to its population, Norway uses very small quantities of toy balloons, as hotels and cafes rarely buy them for festival occasions. A wholesale and retail clothing concern, Steen & Strom, A. S., Kongensgate 23-25, Christiania, is the largest buyer of toy balloons, which it imports from Germany for distribution at certain seasons of the year among purchasers of goods above a certain fixed price.

As to tires, an American firm leads, while Dunlop is second. The prices of leading American cord tires, Michelin and Continental makes, are the same as Dunlops. Distributors usually allow trade discounts of 25 per cent plus five per cent and up to 25 per cent, which leaves them a gross profit of some 18 per cent. Retailers frequently give 10 per cent discount from list prices to consumers.

Italy

Bathing caps, rubber aprons, rubber sheeting, and the like, are manufactured locally and commonly used. Foreign goods also appear on the market and many of them are of American origin but generally imported through England, rather than direct, as small orders can be placed and received without delay.

Germany

The situation is daily becoming worse and worse, and the outlook is black indeed. Unemployment is increasing as more factories are working on a part-time schedule. At present it may be said that most firms average three days' work per week as expenses for labor and raw materials are too prohibitive. In the province of Hannover alone, for instance, there were more than 5,000 part-time workers at the end of August, with all prospects of the number being added to unless something unforeseen occurs. Reports from the insulated wire and cable industry show that some firms did pretty well, but here, too, part-time schedules are the order of the day.

At the prevailing exorbitant prices and discouraging economic factors, people stop buying. Rubber toys are a luxury the average

child must do without. A rubber ball costs one or two million marks and naturally father and mother think twice before deciding on buying toys. In all rubber goods departments, the buyers' strike is noted.

Even in surgical goods—syringes, nipples, notions, household articles—receipts are falling off. Everybody—or nearly everybody—seems to have decided that surgical goods are unnecessary luxuries or that what they have must do for at least another year. In mechanical goods much the same conditions obtain, as also in the tire branch. Factories are on part time schedules and require less mechanical goods, and railroads are not buying new equipment of any sort.

In spite of this there must be enough hope and optimism left—if one is to judge from the fact that there is always a number of registrations of new firms listed in the local papers. The capital of some of these new concerns runs from 600,000 marks to 100,000,000 marks, which when translated into dollars at the present rate of exchange seems ridiculous. Over against these firms, however, must be put the older ones that are forced to go into liquidation, while others have to increase their capital. Thus, Continental Caoutchouc-und Gutta-Percha Compagnie has decided to raise its capital to 630,000,000 marks in order to face the future. Hannoversche-Gummiwerke Excelsior A.-G., increases its capital from 80,000,000 to 300,000,000 and Asbest-und Gummiwerke Alfred Calmon A.-G., from 100 to 225 million marks. Vereinigte Berlin-Frankfurter Gummiwarenfabriken, Berlin-Lichterfelde has brought its capital to 135,000,000 marks. Vereinigte Gothania-Werke, A.-G., will raise its capital from 42 to 90 million marks; Offenbacher Gummiwerke Carl Stöckecht, A.-G., has also decided on similar action and has brought its capital of 47 million marks to 101 million marks, and so one could continue naming the firms who have had to increase their capital in order to be able to carry on.

New Rubber Goods

Among the devices made for facilitating walking on sleet or snow covered city streets and pavements are so-called ice heels. These are shaped like caps that fit over the heels and are kept in place by means of a rubber band. They are of rubber with rubberized felt treads and are lacquered black. Up to the present they are made only for men's shoes as they are rather heavy and clumsy in appearance. The problem now is to make good-looking ice-heels for ladies' shoes.

Rudolph Walther, Oggersheim, has patented a rubber novelty that seems to bear the closest relationship to an article described in the new goods section of THE INDIA RUBBER WORLD of May, 1921. This is a swimming glove of rubber or other material that fits closely at the wrist and has a web of the same material between the fingers of the glove, giving the latter the appearance of a duck's foot. It is claimed for this glove that it eases the movements of the body, increases speed, and helps to keep the swimmer afloat.

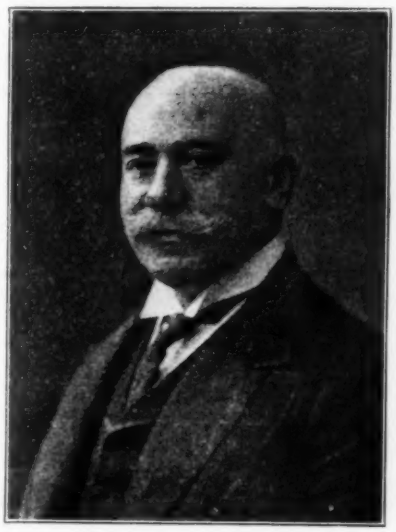
German Necrology

On August 5 the senior partner in the firm Vulkan-Gummiwarenfabrik, Weiss & Baessler A.-G., Leipzig-Lindenau, died quite suddenly. The deceased, Commercial Councillor Weiss, was 71 years old, and was another example of the self-made man. The small factory with which he started and which at first only made hard rubber, was by degrees expanded to take up the manufacture of soft rubber and seamless goods of all kinds. In fact, he was a pioneer in the seamless goods field and although at present rubber articles of all kinds are made, seamless goods still remain the chief articles.

On August 30, 1923, Wilhelm Reithoffer of the firm of Gummi-und Kabelwerke, Josef Reithoffer's Söhne, Vienna, Steyr and Trencin, died at the age of 55 after a lengthy illness. Deceased was well-known as a highly educated, noble minded and particularly clever man.

Celebrates His Seventieth Birthday

Dr. Siegmund Seligmann, director of the Continental Caoutchouc und Gutta-Percha Compagnie, of Hannover, Germany, and one of the leaders of the German rubber industry, celebrated his seventieth birthday on August 19, 1923. Nearing half a century of prominence in rubber manufacture, he has for over forty-seven years held various posts of increasing responsibility with the Continental company, culminating in the direction of its affairs.



Dr. Siegmund Seligmann

Born in 1853 at Verden, and educated there and at Harburg, his commercial training was obtained in the Hannover banking house of B. Magnus, one of the co-founders of the Continental company. In 1876, acting for Messrs. Magnus, he reorganized the Continental company, then facing financial difficulties, and with the assistance of that eminent chemist, the late Dr. Adolph Prinzhorn, laid the foundation for the upbuilding of the business to its present importance in the world's rubber industry. Since 1879 he has been a member of the board of directors. Among the first to realize the importance of the bicycle tire, his foresight gave to the Continental company the initiative in the manufacture of rubber tires of all kinds in Germany.

The importance of his services to the German rubber industry has been duly recognized. In 1905 he received the distinction of "Kommerzienrat," or commercial councillor, and in 1914 that of privy commercial councillor. In 1921 the Technische Hochschule of Hannover conferred on him the honorary degree of doctor-engineer. Herr Seligmann is a member of the Hannover Chamber of Commerce, of the board of the Central Association of German Rubber Goods Manufacturers, and was a member of the board of the German Exhibition Commission.

RUBBER INDUSTRY OF FRENCH INDO-CHINA

From the accompanying tabulation, published by *Commerce Reports*, it will be seen that the caoutchouc industry of French Indo-China has increased greatly during the last decade. For the first six months of the present year the caoutchouc exports from that country amounted to 1,920,310 kilos, while during the first four months of 1923 the total was estimated at 1,566,813 kilos, of which 1,166,935 kilos were shipped to France and 345,163 kilos to Singapore.

Exportations of caoutchouc from French Indo-China have been as follows during recent years:

Year	Kilos	Year	Kilos
1913	213,935	1918	530,678
1914	194,646	1919	2,951,453
1915	376,741	1920	3,141,900
1916	545,879	1921	3,648,209
1917	938,878	1922	4,167,123

Of the total exportations during these 10 years, which amount to 16,709,402 kilos, 14,549,709 kilos have been exported to France and the great majority of the remainder has been shipped to Singapore.

The Rubber Trade in the Far East

By Our Regular Correspondent

Malaya

To those who have been feeling the pulse of restriction and have been gloomily predicting its demise, it must by now have become evident that while everything possible was apparently done to kill it, these efforts were futile and though it cannot be said that restriction is as vigorous as its sponsors hoped it would be, nevertheless it is sound enough to keep prices at a fairly remunerative level.

What it would have developed into had the Dutch wholeheartedly joined in the scheme is a question that takes on edge when it is considered that while net Malayan exports for the first seven months of 1923 were 2,494,754 centals (of 100 pounds) against 2,756,298 centals during the corresponding months of 1922, a decrease of 261,544 centals, total foreign imports—most of which is native rubber from the Dutch colonies—increased by something like 18,526 tons. Direct exports from Java and East Coast of Sumatra during the first half of 1922 were 33,473 metric tons of about 2,204 pounds, against 38,333 tons in the same period of 1923, an increase of nearly 5,000 tons.

However, there is comfort in the reflection that in spite of all this the value of Malayan rubber exports, not including foreign rubber, over the period January-July, 1923, was $56,507,136 more than in the corresponding part of 1922. These figures make us feel charitably disposed toward the world at large, including the Dutch. Optimists look forward to a sudden bulge in the market toward the end of this year but, as the *Straits Times* points out, this can hardly be looked for owing to the probability that consumers bought as much as they could afford to carry when prices began to rise and that their needs are pretty well covered for some time at least. Therefore, it is not thought likely prices will move higher than 50-56 cents (Straits currency) which is considered a satisfactory price for the present.

Restriction Statistics

Further insight into the working of restriction is afforded by the following statistics from the rubber controller's office.

I. TOTAL EXPORTS

		Tons
Total exports from British Malaya during first nine months of restriction		186,074
Exports from restriction area:		
Licensed stocks	7,253	
Production	115,306	
Total	122,559	
Imports foreign rubber	44,772	
Exports from stocks already on Singapore and Penang Islands on October 31, 1922	18,793	
Total	186,074	

II. DEALERS' STOCKS

	June 30 1923 Tons	July 31 1923 Tons
Stocks with dealers:		
Singapore Island	16,917	20,952
Penang Island	3,571	2,937
Total	20,488	23,889

an increase of 3,401 tons.

III. EXCESS OF EXPORTS

	Tons
Total exports from British Malaya between November 1, 1922, and May 31, 1923, exceeded exports from the restriction area plus imports of foreign rubber by	22,567

This figure is approximately the average stock held in Singapore and Penang.

Exports from the restriction area plus foreign imports exceeded exports from British Malaya during June by	115
July by	3,659
Total	3,774

and this is reflected in the rise in Singapore stocks, the slight discrepancy being accounted for by the fact that export figures are based on the declarations received during the month.

IV. ACTUAL RESTRICTION

Standard production for restriction area 274,000 tons per annum.

		Tons
Exportable allowance, November, 1922, to April, 1923, 60 per cent		81,988
Exportable allowance, May, 1923, to July, 1923, 65 per cent		44,428
Total		126,416
Actual exports from restriction	122,559	
Deduct licensed stocks of October 31, 1922	7,253	
Actual production exported		115,306

This represents 56 per cent of standard production.

V. UNEXPORTED BALANCE

	Tons
Balance unexported	11,110

It is estimated that this figure has been reduced by the revision of standard production, consequent on inspection, by 2,000 tons. It is estimated that this carry forward was held as follows:

	Tons
By estates	5,000
By dealers within the restriction area	4,000
Total	9,000

VI. VISIBLE THREE MONTHS' SUPPLY

Estimated visible supply from British Malaya on August 1, 1923, for three months:

	Tons
Carry over	9,000
Exportable allowance 60 per cent	41,000
Foreign rubber imports	15,000
Total	65,000

Future Planting

Now that the scare of the slump has had time to wear off to a certain attenuation, we are beginning to take stock of our condition. With the aid of facts, statistics and optimism we have come to the conclusion that: very little has been done in the way of extending planted acreage since the slump set in; the approximate planted area in Malaya and abroad is about 3½ million acres capable of producing 625,000 tons, which will cover all needs for the next five years even if Europe should in that time begin to recover. After that, however, we think consumption will have overtaken supply so far as to cause a shortage unless we foresightedly work out and carry out a suitable program for extending our acreage by say another million acres.

The *Straits Times* suggests that, beginning with 1924, 200,000 acres should be opened up annually for five years. If, as many expect and hope, the proverbially badly planted and neglected small holdings should have reached the stage of rapid decline and fall within that period, the new plantings would have to be still further extended.

But, of course, these extensions would be quite expensive; a conservative estimate is £60 per acre or £60,000,000 for 1,000,000 acres. Now, says our practical *Straits Times* editor, American consumers must not expect British capital to take the whole of the risk. As this new planting will be done chiefly for the benefit of the American consumers, it is therefore suggested that the bulk of the 60 millions sterling should come from them.

Having settled the question of acreage and determined the manner of financing the new planting, the next thing is to choose a location. Talk of the Philippines, says the editor, is hot air. By a further process of elimination he reaches the comfortable conclusion that Malaya would be the best place for new planting and much of this could be done in cooperation with companies already existing, most of which have facilities for extension.

A Big Latex Contract

According to the *Malay Mail*, it is understood that the United States Rubber Co. has entered into a contract to buy up the whole of the rubber latex output of a company whose estates are not far from Kuala Lumpur. There is a good deal of secrecy about the matter, but it is stated that the Federated Malay States Rail-

ways are making special arrangements for the transportation of 300 tons of latex per month. It is further rumored that the American company is preparing to erect as quickly as possible a factory at Port Swettenham for the purpose of treating a part of the latex by the Hopkinson process.

Malayan Notes

There is continued dissatisfaction among owners of young plantations over the unfair working of the Duncan scale. Daily, almost, instances are sent in to the papers showing how the scale actually is responsible for more than 60 per cent restriction, and among young producers, of only 30-35 per cent. In fact, correspondents prove that several older estates have to overtap in order to collect the quantity allotted them, while young producers are really producing only a third of what their estates are capable of yielding. In order to help clear up this condition, the *Straits Times* has invited young producers to send in necessary data, which will be analyzed so as to indicate the extent of the grievance and the method of redress.

With a view to checking the present output allowed to small native holdings, about 4,000 lots under 25 acres in the Ulu Selangar district are to be visited and inspected by planters from the association of the above-named district. It is expected that other district planting associations will follow this lead and aid the government in making restriction more effective.

Netherlands East Indies

Exports of Native Rubber

The exports of native rubber from the Netherlands East Indies to Singapore and Penang during the first half of 1923 totaled 26,822 tons. From Javanese harbors came 874 tons, East Coast Sumatra 4,526 tons, Palembang 1,603 tons, Djambi 7,822 tons, Riouw 2,618 tons, Pontianak 1,861 tons, Sambas 1,273 tons, Banjermassin 6,245 tons. During the same period the total exports from Java were 17,516 tons and from East Coast Sumatra 20,811 tons. That is to say, the exports of native rubber exceeded those from Java by more than 50 per cent and from Sumatra by almost 30 per cent.

From Banjermassin, Borneo, comes the report that during the first half of 1923 increased activity was noticed in the native bazaars, which is chiefly due to the revival of rubber. Rubber prices fluctuated considerably during that period, but even the lowest prices were sufficiently remunerative to allow the natives to resume exploitation of their estates that had been neglected during the years of the slump. The native plantations in the interior are legion and the better prices have encouraged them to take proper care of their holdings. Nevertheless, tapping methods still leave much to be desired, so that it is taken for granted that the average native plantation is exhausted 3 years after the tapping stage has been reached. The so-called native sheets are readily sold at prices ranging from 30 to 55 gilders a picul (a gilder equals $0.40; a picul is equal to 133⅓ pounds). Statistics show that from the interior alone 4,000 piculs come in every week, which means 16,000 piculs a month, representing a value of 650,000 gilders.

Bud-grafting Opinions Vary

Opinions regarding the value of bud-grafting have of late been most contradictory. Locally this was best illustrated by the contrary views published on the subject, by two authorities, in the same issue of the *Archief voor de Rubber-cultuur*, brief notices of which appeared in earlier issues of THE INDIA RUBBER WORLD. In Malaya, too, there is no unanimity on the matter and while Mr. Belgrave of the Department of Agriculture expressed himself pessimistically, Mr. H. Gough took the opposite standpoint. The *Nederlandsch-Indisch Rubber-en-Thee Tydschrift* of September 1, 1923, commenting on this, gives some data regarding tapping results with four-year-old budded trees. The name of the estate where these trees were planted is withheld.

The buddings, at time of tapping, all had attained a girth of 50 cm. at 1 m. above the junction of scion and stock. Tapping took place daily with one cut over half the circumference at a height of 1 meter. The average production per day was 67 cc. of latex. The best yielder gave an average of 80 cc. a day, and the worst averaged 56 cc. daily. At this rate, the production from 1 bouw (2¼ acres) with tapping carried out 350 days in a year, the rubber content being 33 per cent, would be not less than 1,386 kilos of dry rubber, and that from four-year-old trees!

It must be remembered, according to our authority, that the aim is to find high yielders and to propagate them negatively and as soon as even a single mother tree is found to answer this purpose, the possibility of negative propagation of Hevea is proved. Scientists should free themselves from preconceived notions regarding the usefulness of this method in rendering estates more productive. And since it has been shown that buddings having the qualities of their superior mother trees can be obtained, the problem for scientists to solve is why the scions of all mother trees do not reproduce the qualities desired. Although, therefore, the great expectations first entertained regarding buddings have so far not materialized, this is no reason for abandoning the method, especially as generative reproduction is at least as doubtful and certainly will not give quicker results. Finally, though many problems still await solution the conviction is expressed that increase in the productivity of estates will sooner and more certainly be attained by negative than by generative reproduction.

Writing Off Rubber Plantations

In the *Archief voor de Rubber-cultuur*, J. G. J. A. Maas discusses the question of the amount to be written off for estates each year and indicates several points to be considered in this connection. Thus the period of productivity must be taken into account. The writer does not believe that it will be possible to exploit regularly existing old estates in Sumatra when they are 40 or even over 25 years old.

He believes Hevea trees on old estates attain their period of maximum productivity when they are from 11 to 14 years old and begin to decline when they are about 16 years, from which time the average yield falls to about 10 per cent below the maximum yield. Again a large number of trees are planted on inferior soil or in districts where the climate is unfavorable for their growth. Then individual yielding capacity is an important item.

Recent methods of selection have so far improved the productivity of estates that it may be expected that newer plantings will yield at least 30 per cent more than the older ones. This makes heavy writing-off of old plantations necessary as the period of their usefulness is cut down, since at the above rate it would not pay to exploit the older trees even though they could still be regularly tapped. There is furthermore the risk of sudden progress in the industry to be counted on. This progress may be due to a biological factor or just simply arise from a discovery of a better method of preparation which might necessitate the scrapping of old installations.

Finally the author concludes that normally an estate should be written off in its 25th year, so that from the 5th to the 25th year the annual rate would be 5 per cent. However, as said above, there are estates that are in unfavorable positions and for these would have to be fixed a different coefficient.

A Peculiar Defect in Crêpe

Dr. A. J. Ultée calls attention to a peculiar defect in crêpe samples submitted to him. These samples came from two different estates and showed a number of white spots, some very small, others larger. These were at first thought to be due to moisture, but further investigation showed that this was not the case but that the estates in question had each independently taken up the practice of pressing two sheets of crêpe together through the rolls and that the white spots arose when the spacing of the rolls was too wide, so that the sheets were not sufficiently compressed and air was left between them. When the spacing of the rolls was reduced, the defect was not found.

Recent Patents Relating to Rubber

The United States

Issued September 4, 1923

No. 1,466,732 Airship. C. A. Snider, Atlanta, Georgia.
1,466,765 Demountable collapsible rim. L. B. and J. E. Spencer—both of Akron, Ohio.
1,466,812 Demountable wheel rim. J. Wentz, assignor of one-half to M. J. Gans and one-fourth to P. F. Vogel—all of Perham, Minn.
1,466,891 Pneumatic tire. R. B. Disbrow, Owatonna, Minn., assignor of one-half to L. P. Ordway, St. Paul, Minn.
1,466,942 Method of manufacturing tires. K. D. Saulpaw, Calhoun, Tenn.
1,467,113 Piston packing with rubber core. T. A. Meyers, Toledo, Ohio.
1,467,172 Tire. D. S. Kennedy, New York, N. Y.
1,467,216 Figure toy roundabout. S. J. A. Wiebe, assignor to American Toyland Creators, Inc.—both of Newark, N. J.
1,467,235 Elastic band. G. Dekoff, Chicago, Ill.

Issued September 11, 1923

1,467,313 Tire flap. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
1,467,315 Collapsible core. F. H. Grove, Columbiana, Ohio.
1,467,411 Toy balloon. A. P. Witten, Akron, Ohio.
1,467,440 Valve for use in connection with pneumatic tires applicable for other suitable purposes. J. Lumb, Elland, England.
1,467,463 Pneumatic swimming belt and method of making same. J. M. Welch, Des Moines, Iowa.
1,467,484 Dust cap for tire valves. H. P. Kraft, Ridgewood, N. J.
1,467,524 A hard rubber mouthpiece for saxophone and clarinet. J. J. Babbitt, Elkhart, Ind.
1,467,547 Rubber heel. L. Kaplan, New York, N. Y.
1,467,557 Puncture-proof inner tube. H. Nicolardot, Boulogne-sur-Seine, France.
1,467,665 Pneumatic tire. N. G. Warth, Gallipolis, Ohio.
1,467,780 Tire valve. L. S. Downs, East Cleveland, and G. Heckling, Cleveland—both of Ohio.
1,467,852 Demountable rim. M. C. Hall, West Marion, S. C.
1,467,875 Pneumatic composite heel. J. E. Price, Los Angeles, Calif.
1,467,881 Demountable rim. L. and F. J. Rosebush—both of Flint, Mich.
1,467,904 Infant's pacifier nipple. D. J. McOmish, Northcote, Victoria, Australia.
1,467,950 Overshoe. F. Rauscher, West New Brighton, N. Y.

Issued September 18, 1923

1,468,035 Tire filler. G. M. Schwendler, Appleton, Wis.
1,468,072 Comfort cushion. H. M. Ogle, Atlanta, Georgia.
1,468,099 Inner tube protector. J. O. Belt, Joplin, Mo.
1,468,105 Filler for vehicle tires. H. B. Fogel, Philadelphia, Pa.
1,468,221 Tire adapter. C. H. Will, assignor of one-third to H. E. Wilcox, and one-third to R. D. Wilcox—all of Minneapolis, Minn.
1,468,439 Nonskid tire for vehicle wheels. P. A. Cozakos, Portland, Oregon.
1,468,443 Demountable rim. C. Esmarian, Paterson, N. J.
1,468,464 Life preserver. A. D. Elias, Philadelphia, Pa.
1,468,475 Apparel garment. D. Kops, assignor to Kops Brothers, Inc.—all of New York, N. Y.

Issued September 25, 1923

1,468,634 Lining or friction member for brake bands, brake shoes or other articles. F. A. Headson, Milwaukee, Wis.
1,468,821 Valve cap. J. Long, Victoria, Texas.
1,469,020 Resilient channel and cushion tire. C. S. Preston, San Diego, Calif.
1,469,029 Rubber glove. G. F. Underwood, London, and W. Luffsmith, Brighton, assignors to Plantation Rubber Manufacturing Company, Limited, London—all of England.
1,469,188 Inflatable decoy. G. H. Moore, assignor to Airtite Decoy Co., both of Kansas City, Mo.

Issued October 2, 1923

1,469,250 Cap for tire-valve tubes. C. F. Cunningham, Canton, Mass.
1,469,286 Legging. F. E. Toniutti, Forest Park, Ill.
1,469,307 Sandpapering roll with rubber layer. G. R. Keltie, Woonsocket, Rhode Island.
1,469,344 Roller. W. Ware, Chicago, Ill.
1,469,473 Tire spreader. P. R. Battaline, Hartford, Conn.
1,469,552 Registering thermostat in combination with an air bag. R. S. Burdette, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.
1,469,670 Tire. G. H. W. Lindhorst, Grace, Mont.
1,469,739 Puncturing attachment for collapsible tubes. G. S. Turner, New Brunswick, N. J.
1,469,754 Core chuck. J. W. Dirkson, Kent, and L. E. Clough, Akron, Ohio, assignors to The Mason Tire & Rubber Company, a Corporation of Ohio.
1,469,756 Apparatus for transporting gases. P. H. Haynes, Buffalo, N. Y., assignor to The Linde Air Products Co., a Corporation of Ohio.
1,469,764 Syringe. B. F. Crisenberry, assignor of two-thirds to M. L. White—both of Indianapolis, Indiana.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

Granted September 4, 1923

233,966 Milking teat cup. H. M. O'Connor, Vancouver, B. C., Canada.
233,997 Tank valve. B. F. Goodrich Co., New York, N. Y., assignee of F. J. Shock, Akron, Ohio.
234,017 Collapsible last. The Canadian Consolidated Rubber Company, Limited, Montreal, Quebec, Canada, assignee of L. J. James, Waterbury, Connecticut.
234,039 Massage instrument. The Van Ess Laboratories, Inc., assignee of R. H. Van Sant—both of Chicago, Illinois.

Granted September 11, 1923

234,110 Sponge mounting for finger moisteners. G. W. Jones, Toronto, Ontario, Canada.
234,139 Brassiere. C. Thibodeau, Montreal, Quebec, Canada.

Granted September 18, 1923

234,226 Waterproof boot with rubber studded insole. D. Bojtos, Roebling, New Jersey.
234,271 Bed spring with spirals encased in rubber. J. G. Mitchell, Monkstown, County of Dublin, Ireland.
234,362 Pneumatic tire. C. A. Cleghorn, East Molesey, Surrey, England.
234,376 Horseshoe with rubber body. F. and N. Kusiak assignee of one-half of the interest each, both of New York, N. Y.

Granted September 25, 1923

234,439 Combined leather and rubber heel. A. E. Lewis, Ingersoll, Ontario, Canada.

The United Kingdom

Published August 29, 1923

200,179 Bath mats. Plantation Rubber Manufacturing Co., Ltd., and M. M. Dessau, 14 Mincing Lane, London, England.
200,357 Rubber heel pads, half soles and sole pieces. A. Bulbick, 76 The Crescent, Eastleigh, Hampshire, England.
200,368 Air cushion for boots and shoes. C. Cooney, 1 Metcalfe Terrace, Harolds Cross, Dublin, Ireland.
200,383 Rubber-soled boot or shoe. Greengate & Irwell Rubber Co., Limited, and W. Hubbard, Greengate, Salford, Lancashire, England.
200,393 Seamless rubber hot-water bottle. O. Y. Imray, 30 Southampton Buildings, London, England.

Published September 5, 1923

200,406 Studded tire. C. Baxter, Cleveland House, Bradford Road, York, and J. Mellor, 8 Elton Road, Bury, Lancashire, England.
200,417 Tire valve. E. R. Royston, Tower Building, Water street, Liverpool, England.
200,424 Revolving and reversible heel protector. W. J. Wilpalm, 70 Clissold Road, Clissold Park, London, England.
200,438 An appliance for tapping rubber trees. F. J. P. Cheesbrough, Lloyd's Bank Buildings, Canute Road, Southampton, England.
200,443 Non-refillable bottle with rubber washer. E. H. Bunday, 23 Belgravia Road, North End, Portsmouth, England.
200,449 Hair-curling device with rubber sealing disk. A. H. Bongers, The Exchange, Muswell Hill, London, England.
200,457 Cushion tire. H. N. Atwood, Samarkand Farm, Monson, Massachusetts.
200,562 Reinforcement for worn tire tread. C. W. Fulton, Huntershill Quarry, Bishopbriggs, near Glasgow, Scotland.
200,570 Method of making football bladders. T. Dudson, 42 High street, Abertridwr, near Cardiff, England.
200,641 Air-cushioned heel with removable pad. F. E. Trotter, 11 Hamburg street, Belfast, Ireland.
200,667 Rubber envelope for packing. G. W. Brown, Woohaye, Sydenham, Ave., Belfast, Ireland.
200,680 Heel friction pad of sponge rubber. W. S. Shaw, 15 Park View, Nantwich, Cheshire, and L. W. Hucklesby, 5 South Mount street, Beeston Hill, Leeds, England.
200,708 O. J. Lowe, 80 Bridgford Road, West Bridgford, Nottingham, England.
200,730 Corset with elastic inserts. D. Kops, 525 West End avenue, New York, N. Y.
200,755 Rubber protector for chin-strap. G. S. Bates, 21a Jermyn street, London, England.

Chemical Patents will be found on Pages 93-94, Machinery and Process Patents on Pages 97-98.

200,764 Rubber glove with skeleton reinforcement. O. Y. Imray, 30 Southampton Buildings, London, England.

200,769 Rubber-coated disk valves for pumps. R. Body, Ltd., and M. Jennings, St. Andrews Works, Bury Street, Edmunds, Suffolk, England.

200,776 Smokers' rubber-padded ash-tray. A. Dunhill, 137 High Street, Notting Hill Cate, London, England.

Published September 12, 1923

200,817 Rubber quoits. W. E. Scotson, Woodlands, James street, Mosman; S. L. Elphick, 174 Barcom Avenue, Darlinghurst, and E. Scotson, Woodlands, James street, Mosman—all of Sydney, Australia.

200,840 Rubber nipple, for feeding-bottle. S. Dreyfus, 16 Grand Pont, Lausanne, Switzerland.

200,847 Rubber guard for protecting fastenings during laundry operations. R. S. Brown, 23 Napier avenue, Hurlingham, London, England.

200,856 Device with rubber rings for holding window-cleaning cloths. S. E. Conrad, 227 New Kent Road, London, England.

200,943 Leather and rubber tire cover. W. J. Jackson, Mellersh, 28 Southampton Buildings, London, England.

201,030 Cushion tire. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London, and C. MacBeth, Fort Dunlop, Erdington, Birmingham, England.

201,075 Sheet rubber powder puff case. T. W. Smith, 1491 South Concord street, South St. Paul, Minnesota.

201,112 Marine life-saving appliances. L. J. O'Shaughnessy, 276 Gottingen street, Halifax, Nova Scotia, Canada.

Published September 19, 1923

201,199 Flat-tire signal valve. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London; W. H. Paull, Aston Cross and F. Fellows, Fort Dunlop, Erdington—both of Birmingham, England.

201,261 Corset with elastic sections. S. Percival, 40 Chauncey Lane, London, England.

201,266 Sponge rubber device for cleaning golf balls, etc. R. M. H. Randell, 10 Copers Cope Road, Beckenham, Kent, England.

201,274 A composition for making cores for tyres, life buoys, golf balls, floor coverings, etc. J. R. C. Gordon, 1 Woodlands Terrace, Charing Cross, Glasgow, Scotland.

201,312 Cycle wheel support with rubber buffers. H. Hornsby and H. Goodwyn, Old Stackyard, Scunthorpe, Lincolnshire, England.

201,320 Tire gage. H. S. Rowell, 58 Airedale avenue, Chiswick, England.

201,362 Method of attaching uppers to insoles and soles. H. Percival, The Poplars, Wellingborough, Northamptonshire, England.

201,363 Crêpe rubber mop. M. M. Dessau and Plantation Rubber Manufacturing Co., Ltd., 14 Mincing Lane, London, England.

201,372 Crêpe rubber back for boat seats. J. H. Montagne, 69 New Bond street, London, England.

201,443 Rubber handle for flush cistern. E. Keeble and J. F. Kesper, 7a, Lower Belgrave street, Victoria, London, England.

201,468 Non-slipping device for ladders. A. Wingler, 154 Winterhurerstrasse, Zurich, Switzerland.

201,477 Rubber and leather heel pad. M. Watson and Danipad Rubber Co., Ltd., 5 Market street, Finsbury, London, England.

201,485 Garter. E. L. Holdon, Wilson, 99 Belgrave Road, Victoria, London, England.

201,491 Solid tire. H. N. Atwood, Monson, Massachusetts.

201,493 Solid tire and wheel. O. Andrews, 67 Fitzherbert street, Palmerston North, Wellington, New Zealand.

201,496 Rubber scrubbing pad. Plantation Rubber Manufacturing Co., Ltd., and M. M. Dessau, 14 Mincing Lane, London, England.

201,497 Rubber polishing pad. Plantation Rubber Manufacturing Co., Ltd., and M. M. Dessau, 14 Mincing Lane, London, England.

201,501 Inflatable life belt. P. Guterman, 19 Gee street, Euston, London, England.

201,504 Toy balloon. L. R. Holycross, 1564 East Main street, Columbus, Ohio.

201,541 Combination hard and elastic rubber dentures for upper jaw. L. J. Rud, 2 Ostergade, Herning, Denmark.

Published September 26, 1923

201,613 Revoluble rubber heel. D. Baxter, 47 Kirkham Road, Great Horton, Bradford, Yorkshire, England.

201,647 Rubber heel with studs. F. W. Hilliar, Station Road, Hayes, Middlesex, England.

201,669 Spraying nozzle with rubber bushing. W. J. McFarlane, The Block, Collins street, Melbourne, Australia.

201,689 Milk churn with rubber foot-rings. A. S. F. Robinson, White House, Barsham, Beccles, Suffolk, England.

201,690 Milkchurn lid with rubber buffer. A. S. F. Robinson, White House, Barsham, Beccles, Suffolk, England.

201,714 Collar stud with rubber disk. W. Jones, 31 Mayola road, London, England.

201,716 Crêpe rubber wash cloths. M. M. Dessau and Plantation Rubber Manufacturing Co., Ltd., Mincing Lane, London, England.

201,737 Self-balancing soothing rubber nipple. B. C. Woolf, 94 Balsall Heath Road, Birmingham, England.

201,747 Four-chambered vacuum plunger. W. V. Manley, 31 Hungerton street, Lenton, Nottingham, England.

201,759 Rubber packing washer for stuffing-box. C. J. J. Winder, 28 Northgate street, and J. W. Barker, 23 Bouverie street—both of Chester, England.

201,761 Rubber foot mat. J. I. Taylor, New York House, Golcar, near Huddersfield, England.

201,767 Soothing nipple. J. K. Hussey, West Heath, Northfield, Birmingham, England.

201,775 Rubber washing machine. J. E. Pointon, Westwood Works, Peterborough, England.

201,778 Sidewall cleats for stabilizing a tire. J. Donkin, 3 Pembroke Cottages, Edward Square, Kensington, London, England.

201,797 Puncture-proof tire. E. V. Woolven and T. Whiteoak, Three Hills, Alberta, Canada.

201,815 Non-porous wind-proof undergarment. P. J. H. Edwards, 73 Hamilton Road, and J. M. Davis, 73 Harnell Lane East—both of Coventry, England.

201,824 Metal heel with rubber lift. W. Sharpe, Salisbury, 18 Queen Anne street, London, England.

201,833 Reinforced solid tire. J. H. Blackburn, 312 New Hall Lane, Preston, Lancashire, England.

201,863 Sponge rubber filler for tire. J. H. Dalbey, 737 Douglas avenue, Elgin, Illinois.

New Zealand

Published July 26, 1923

49,487 Milking machine teat-cup with rubber tube member. E. J. Ellery, 135 Teviot street, Invercargill, New Zealand.

50,060 Rubber blocks for flooring. A. C. Byerley, Wickham street, Brisbane, Queensland, Draper, and G. A. H. Robbins, "Delamore," Kedron, Brisbane.

Published August 9, 1923

48,526 Rubber cap for cow's horn. H. Kruse, Wharehine, Kaipara, Auckland, New Zealand.

49,820 Boot lace with rubber tip. C. Melville, 207 Riddiford street, Newtown, Wellington South, New Zealand.

Published August 23, 1923

48,618 Truss with rubber cord. F. M. Back, 11 Walkerville Terrace, Gilberton.

48,719 Heel pad with rubber section. G. S. Marshall, 364 Toorak Road, South Yarra, Vic., and J. W. Mason, "Loxia," Begonia Road, Gardenvale, Victoria, New Zealand.

Germany

Patents Issued, With Dates of Issue

382,819 (April 4, 1922). Wedge-shaped heel cushion of rubber or the like. Max Samuel, Rostack i. M. and Joseph May, Hermannstrasse 41, Frankfurt-am-Main.

383,007 (December 4, 1921). Rubber sole. Heinrich Dresing, Bad Oeynhausen.

383,008 (December 4, 1921). Rubber sole. Heinrich Dresing, Bad Oeynhausen.

383,202 (June 30, 1921). Injection-syringe. Albert Erbe, Lindengasse 18, Dresden.

383,272 (June 30, 1921). Syringe. Albert Erbe, Lindengasse 18, Dresden.

383,275 (October 28, 1922). Irrigator with adjustable holder. Max Manfred von der Heyden, Helmstedterstrasse 17, Berlin-Wilmersdorf.

383,276 (October 21, 1922). Irrigator. Otto Kurt Lakus, Boxhagenerstrasse 10, and Georg Reinsch, Falkensteinstrasse 7, Berlin.

383,370 (October 22, 1922). Syringe. Dr. Otto Hasselmann, Langgasse 1, Wiesbaden.

383,399 (June 24, 1922). Bulging device of perforated rubber. Karl Dressel, Dorotheenstrasse 6, Erfurt.

383,482 (February 3, 1923). Syringe. Dr. Otto Hasselmann, Langgasse 1, Wiesbaden.

383,484 (February 26, 1922). Inhaling apparatus. Georg Koser, Schellingstrasse 3, Munich.

383,927 (March 24, 1922). Crutch support with steel point and rubber stump. Emil Rohrbacher, Hanweiler, Kr. Saarbrücken.

384,132 (December 19, 1922). Pessary for curing piles. Hermann Trippel, Seyfferstrasse 59, Stuttgart.

Design Patents Issued with Dates of Issue

852,328 (November 11, 1922). Extinguisher, with sponge rubber reinforcement, to be attached to the hand. Conrad Bernthsen, Kirchstrasse 10, Hamborn a. Rhein.

852,557 (December 27, 1922). Tablet of rubber, Continental-Caoutchouc und Gutta Percha Compagnie, Hannover.

852,698 (July 3, 1923). Rubber toy with washable fabric cover. Margot v. d. Heyden, née Jentsch, Heimstedterstrasse 17, Berlin-Wilmersdorf.

852,704 (July 23, 1923). Exchangeable rubber heel. Alfred Brandt, Dominikanerstrasse 3, Halberstadt.

852,730 (February 14, 1923). Rubber corner for shoe heels. J. T. S. Rubber Co., Limited, London; represented by: Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, of Frankfurt-am-Main, and T. R. Koehnhorn and E. Noll, Berlin S. W. 11.

852,803 (July 11, 1923). Bar-handles for bicycles and motorcycles. Hannoversche Gummiwerke Excelsior A.-G., Hannover-Limmer.

853,052 (June 18, 1923). Binder, through the elastic parts of which rubber bands are drawn. J. Schwarz, Kurfürstenstrasse 59, Mainz.

853,162 (March 30, 1921). Subcutaneous syringe. Gunebaum & Scheuer, Berlin.

853,271 (August 6, 1923). Sanitary binder. Max Förster, Blasewitzerstrasse 72, Dresden.

853,299 (June 19, 1923). Siphon tube. Medizinisches Warenhaus A. G. Berlin.

853,459 (August 10, 1923). Rubber toy. Max v. d. Heyden, Leipzigerstrasse 119-120, Berlin.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted September 4, 1923, Act of February 20, 1905

172,527 The letters N M V O, broken to give the effect of shading—kapok and crude rubber. Netherlands Corporation for Oversea Trade, Inc., New York, N. Y.

172,528 The letters N C O T, broken to indicate shading—kapok and crude rubber. Netherlands Corporation for Oversea Trade, Inc., New York, N. Y.

Granted September 11, 1923, Act of February 20, 1905

172,584 The letter S, within the double outline of which are the words: SAFE SCHULTHESS STRONG—rubber hose. Ernest Schulthess, doing business as Atlas Rubber Co., New York, N. Y.

172,659 NULOID—hard rubber composition. Nuloid Corporation, Wilmington, Delaware, and New York, N. Y.

172,669 In an oval the word: CHEMITEX. Outside the border the words: CHEMICAL SCIENCE CORRECTLY APPLIED—artificial patent and suede leather and rubber-surface cloth. The Chemitex Products Co., Akron, Ohio.

172,775 CHACO—molded rubber heels and soles; fiber soles and heels; rubber, fiber and fabric shoes; rubber and fiber top lifts. Benjamin F. Chamberlin, doing business as B. F. Chamberlin, Boston, Mass.

172,776 A circular monogram CBF, the C encircling the other two letters; within the double border surrounding the monogram the firm name and address: B. F. CHAMBERLIN, BOSTON, U. S. A. Benjamin F. Chamberlin, doing busines as B. F. Chamberlin, Boston, Mass.

172,815 WATCHMWEARM—shoes of leather, fabric, rubber, and combinations of same. The A. E. Pitts Shoe Co., Columbus, Ohio.

172,816 YOUTHLYNE—description and firm address same as for 172,815.

172,818 PEDICATOR—description and address same as for 172,815.

172,821 TRU-FORM—leather shoes and storm rubbers for men, women and children. O. Fuhrman, Inc., New York, N. Y.

172,888 SILVERTOWN—inner tubes for pneumatic tires. The B. F. Goodrich Co., New York, N. Y.

172,929 FOOT GIDE, the two words underscored—shoes of leather, fabric and rubber, leather and rubber and leather and fabric. The A. E. Pitts Shoe Co., Columbus, Ohio.

172,957 The words: CRESCENT "COMFY" BABY BLOOMERS, with a crescent moon as background—bloomers for babies and children.

172,961 "SERVALL"—raincoats and topecats. C. B. Shane Co., Chicago, Illinois.

172,998 TUT-ANKH-AMEN—corsets, brassieres and girdles. Birdsey-Somers Co., New York, N. Y.

Granted September 11, 1923, Act of March 19, 1920. Section 1 (b)

173,066 GLASGOW, the letters seemingly made of Scotch plaid—transmission lining. Pacific Coast Rubber & Supply Co., San Francisco, California.

173,075 "WETPRUFE"—barber bibs and protective devices to fit around the neck and shoulders of a person. The Canfield Rubber Co., Bridgeport, Connecticut.

173,082 FIREPROOF—brake linings. John W. Pohlman, doing business as J. W. Pohlman Co., Indianapolis, Indiana.

Granted September 18, 1923, Act of February 20, 1905

173,113 The words IRON-CLAD PATCH, one above and the other below a figure clad in armor from helmet to shoes, and encircled by a tire and a tube, both punctured—adhesive patches for tires and tubes. Iron Clad Patch Laboratories, Inc., New Orleans, Louisiana.

173,120 RESILIOCORD—tires wholly or in part of rubber, and inner tubes for tires. The Star Rubber Co., Akron, Ohio.

173,243 WIXOM—machinery belting, hose and packing composed of rubber or rubber and fabric. The Manhattan Rubber Manufacturing Co., Passaic, New Jersey.

Granted September 25, 1923, Act of February 20, 1905

173,319 OUTDOOR GIRL—shoes made of leather, fabric, rubber, and combinations of there. The L. D. Stickles Shoe Co., Red Wing, Minnesota.

173,453 STANDARD STUDENT—clothing made of either waterproof oiled cloth, rubberized surface cloth, or cravenette-proofed cloth. Standard Oiled Clothing Co., New York, N. Y.

173,454 DUBLE-DUTI—raincoats and rain-proof clothing. Louis N. Cohen & Co., Inc., New York, N. Y.

Granted October 2, 1923, Act of February 20, 1905

173,619 The letter S so made as to appear to be the central portion of a rectangle from which two corners have been separated to form oblongs at either side—soles and heels for boots and shoes composed wholly or in part of rubber. Seiberling Rubber Co., Akron, Ohio.

173,649 Representation of the upper part of a glove, indicating by shading lines a band attached to the cuff—surgeons' gloves. Davol Rubber Co., Providence, Rhode Island.

173,716 "ZEPHYR"—dress shields. Associated Merchandising Corporation, Newark, N. J., and New York, N. Y.

173,719 DAINTYWEIGHT—dress shields.. I. B. Kleinert Rubber Co., New York, N. Y.

173,739 FELCO—rubber pads for use in the textile and other industries. Fellsway Rubber Co., Boston, Massachusetts.

173,773 TUADS, at the center of a black circular background; following the circumference of the circle, within border lines the words: R. T. VANDERBILT CO. N. Y. AMERICAN PRODUCTS—chemical compound used as an accelerator in the manufacture of rubber products. R. T. Vanderbilt Co., Inc., New York, N. Y.

173,846 Within a modified oval the words: MAILMAN SHOES FACTORY TO FEET, and the words WORK and DRESS, the one above and the other below the oval—shoes of leather and leather and rubber. The Phillip Giard Shoe Co., Brockton, Massachusetts.

173,885 On a square black background the letter U inclosing the word WEAR, the letters one above another; following the border lines the words: GOODYEAR RUBBER COMPANY TRADEMARK—rubber boots and shoes and arctics. Goodyear Rubber Co., Middletown, Connecticut.

173,940 FLEXIPED—shoes of leather and of leather and rubber. Lord & Taylor, New York, N. Y.

173,974 "HATTIE SNOW"—nurses' uniforms, etc., including caps and bibs, shoes of leather, rubber, fabric, and combinations thereof. Charles D. Randles, doing business as Randles Manufacturing Co., Ogdensburg, New York.

174,006 On a modification of a shield the words: TRU-TO-NATURE, above, and the signature ROBT. J. SADLER diagonally across. Above the shield a scroll at the center of which on a square background is the letter S—shoes of leather, rubber, fabric, or combinations thereof. Robert J. Sadler Shoe Co., Inc., New York, N. Y.

174,097 Representation of a fish swimming through the circular opening of a tire—tire fabrics in the piece. Salmon Falls Manufacturing Co., Boston, Massachusetts.

174,113 On a square black background the word LONGWEAR, and under this the representation of water falls—shoes of leather, rubber, and fabric. Niagara Shoe Co., Inc., Buffalo, New York.

174,129 Within a triangle three conventionalized flowers, the one in the center having a human face; under these the word: ROSEBUD, —ric-rac braid and shirred ribbon elastic. Barash Brothers, Inc., New York, N. Y.

Granted October 9, 1923, Act of February 20, 1905

174,205 EVERITE, the letters so graduated in size that the smallest are at the ends and the largest at the center—tire repair compounds, adhesives for uniting to rubber, leather, cloth, etc., adhesive cements and rubber mending cements, compounds and adhesives. Cahill & Malone, doing business as Everite Patch Co., Toledo, Ohio.

Granted October 16, 1923, Act of February 20, 1905

174,420 IDECO—water bottles, fountain syringes, screw-capped ice-bags, and combination water bottles and fountain syringes. Independent Drug Co., Jacksonville, Florida.

174,431 PROTECTION—rubber tires and inner tubes. Leo L. Chadwin, doing business as Protection Tire & Rubber Co., Philadelphia, Pennsylvania.

174,436 "RUN-BO"—rubber matting. The Paine & Williams Co., Cleveland, Ohio.

174,437 SEDAN—rubber and fabric tires. The Brunswick-Balke-Collender Co., Wilmington, Delaware, and Chicago, Illinois.

174,442 Representation of a transmission band with the lining indicated in red; on a diamond-shaped background in the center the letters P-B,—automobile transmission bands. Parks and Bohne, Inc., St. Louis, Missouri.

174,449 Representation of a balloon, against the bag of which is the representation of a winged foot; on the black oval background are the words: AIRSHIPS-SPHERICALS-KITES, NUMBER, TYPE, AERONAUTICAL ACCESSORIES; following the outline and enclosed in the border are the words: MFD BY THE GOODYEAR TIRE & RUBBER CO., AKRON, OHIO, U. S. A.—Description as indicated on trademark, and comprising cars, bullet and puncture proof casings for gasoline tanks on balloons, aeroplanes, baskets, and pontoons. The Goodyear Tire & Rubber Co., Akron, Ohio.

174,455 Within the annular space provided by two concentric circles the words: SWARTZ BRAND, in white letters, the background being black; at the center in black on white background is the word INTIRE, the letters being so graduated in size as to conform with the circumference of the border and completely fill the center space—automobile and cycle tire boots, patches, and patching material other than tire tape and adhesive gum. Schwartz Brothers, Chicago, Illinois.

174,456 MENGO—adhesive patches. Mengo Products Co., Pittsburgh, Pennsylvania.

174,465 WABACO, in white letters on a diamond-shaped black background, the letters graduated in size so that the smallest are at the ends and the B is largest—leather, woven and rubber belting, hose, sheet packing and rod and piston packing. Warren & Bailey Co., Los Angeles, California.

Granted October 16, 1923, Act of March 19, 1920, Section 1 (b)

174,535 TRIPLEWEAR—transmission lining for Ford cars. Durwyllan Co., Inc., Paterson, N. J.

The Dominion of Canada

Registered

34,128 Cordue—fabric belting. Textiles Development Corporation, New York, N. Y., U. S. A.

34,129 Levelet—woven cord fabric for use in the manufacture of tires and fabric belting. Textiles Development Corporation, New York, N. Y., U. S. A.

The United Kingdom

Published September 5, 1923

435,343 YORKER—cricket balls. The Flint Rubber Co., Limited, 9 Mallett street, Camperdown, Sydney, New South Wales, Australia. For service in the United Kingdom address T. B. Browne, Ltd., 163 Queen Victoria street, London, E. C. 4.

438,524 AQUARETTE—waterproof and rainproof clothing. J. Weinberg & Sons, Aquarock Mills, North street, Cheetham, Manchester.

438,670 BUR-BRI—goods of rubber or gutta percha exclusively in Class 40. Fred Burris & Sons, 7 to 15 Redcliffe street, Bristol.

439,157 STELLITE—footballs. A. G. Spaulding & Bros., Ltd., 317-18 High Holborn, London, W. C. 2.

Published September 12, 1923

B423,149 ALL-WEATHER TREAD—rubber tires and treads therefor. The Goodyear Tire & Rubber Co. of Canada, Ltd., Lake Shore Road, New Toronto, Ontario. For service in the United Kingdom address Marks & Clerk, 57-58 Lincoln's Inn Fields, London, W. C. 2.

437,472 DRILASTIC—rubber or rubber and canvas seats or tops for motor-cycle and other saddles. Flexible Saddles, Ltd., Coleridge Chambers, Corporation street, Birmingham.

438,356 WUDMILN—goods of rubber and gutta percha exclusively in Class 40. Wood-Milne, Ltd., and George Spencer Moulton & Co., Ltd., both of 2 Central Buildings, Westminster, London, S. W. 1.

Published September 19, 1923

439,381 Representation of an emu and beneath it the words: EMU BRAND —driving belts and belting, for machinery, and carrying belts and aprons for machinery, composed wholly or partly of rubber, gutta percha or balata. William Walker & Sons, Ltd., Rose Hill Tannery, Nelson street, Bolton, Lancashire.

Published September 26, 1923

434,948 STORMOWAY, in script with an upward slant—rainproof and waterproof garments. W. O. Peake, Ltd., 34 Mortimer street, London.

436,394 PALASTIC—elastic cords, braids and webs, elastic corset laces and brace ends, all of rubber, entirely or partly. W. J. Adams & Co., Ltd., 7 Museum street, Manchester.

438,354 Securitas, the first and final letters being connected by a line curving above the word—teats, soothers, enemas, and finger stalls, all being of rubber. O. A. C. Martin, trading as Charles Martin & Co., 3 Tooks Court, Cursitor street, London, E. C. 4.

New Zealand

Published July 26, 1923

20,129 Representation of a mortar and pestle encircled by a laurel wreath, and above this the words: MORTAR AND PESTLE BRAND—rubber hot water bags. Hayward Brothers & Co., Ltd., 48-52 Peterborough street, Christchurch.

20,229 KRO-FLITE—games and sporting articles exclusively in Class 49. A. G. Spaulding & Bros. of Australia, Ltd., 204 Clarence street, Sydney, New South Wales.

20,272 PAXWATE—rubber soles. George Pirrit, 100-102 Victoria street, Auckland.

20,273 PAXOPAD—rubber heels. George Pirrit, 100-102 Victoria street, Auckland.

20,274 PAXLITE—rubber soles. George Pirrit, 100-102 Victoria street, Auckland.

Published August 9, 1923

20,328 KEEMO—brake blocks, brake linings, surfacing materials, friction driving material for lining or covering friction clutches, and pulleys, tubular hose, driving ropes and bands, packing and washers, etc., all included in Class 50. Small & Parks, Ltd., Hendham Vale, Harpurhey, Manchester, Lancaster, England.

Published August 23, 1923

20,334 Representation of a rubber heel against a narrow oblong background on which are the words NEVAR TIAR. The heel is stamped with a representation of the trademark, above the word: TRADEMARK—rubber heels. A. J. Toogood, G. W. Otterson, H. A. Smith and H. G. Dockett, trading as Pneumatic Heel Syndicate, all of Union Bank Chambers, Featherston street, Wellington.

Designs

The United States

Issued* September 4, 1923

62,985 Tire. Term 14 years. Elue O. Fritch, Belmont, Mass., assignor to Hood Rubber Co., Watertown, Mass.

63,002 Non-skid tire tread. Term 3½ years. Albert Linn Murray, assignor to Auburn Rubber Co., both of Auburn, Indiana.

Issued* September 18, 1923

63,019 Tire. Term 14 years. Harris Alexander, San Antonio, Texas.

63,022 Tire. Term 3½ years. Joseph J. Black, assignor to The Master Tire & Rubber Co., both of Dayton, Ohio.

63,033 Tire. Term 7 years. Edison G. Hulse, assignor to Kelly-Springfield Tire Co., both of Cumberland, Maryland.

63,034 Tire tread. Term 7 years. Elvin H. Johnson, Chicago, Illinois.

63,035 Tire tread. Term 7 years. Elvin H. Johnson, Chicago, Illinois.

63,036 Tire tread. Term 7 years. Elvin H. Johnson, Chicago, Illinois.

63,038 Tire tread. Term 14 years. Harold D. Mitchell, Brooklyn, N. Y., assignor to Sheffield Clark, trustee, Nashville, Tennessee.

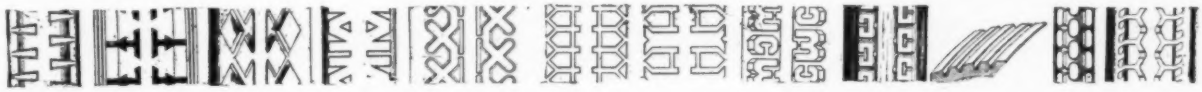
63,041 Rubber heel. Term 14 years. George Ross, Lorain, Ohio.

Issued* September 25, 1923

63,048 Tire tread. Term 14 years. Jackson D. Comstock and Irvin E. Fair, both of Chester, West Virginia.

63,051 Tire tread. Term 14 years. Benjamin Gottlieb, Brooklyn, N. Y.

63,056 Tire tread. Term 14 years. John I. Martin, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.



62,985 63,002 63,019 63,022 63,033 63,034 63,035 63,036 63,038 63,048 63,051 63,056

63,073 63,097 63,107 63,112 63,115 63,122

63,059 Toy balloon. Term 7 years. Robert W. Page, El Paso, Texas.

Issued* October 2, 1923

63,073 Tire tread. Term 7 years. James M. Cranz, Buffalo, N. Y.

63,097 Tire. Term 14 years. George U. Blaser, assignor to Kelly-Springfield Tire Co., both of Cumberland, Maryland.

63,107 Tire. Term 7 years. Elijah McCoy, assignor of one-half to George W. Mculden, both of Detroit, Michigan.

63,112 Tire. Term 14 years. Samuel B. Robertson, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

63,115 Tire. Term 14 years. James D. Tew, Hudson, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

Issued* October 9, 1923

63,122 Tire tread. Term 14 years. Russell F. Miller, Akron, Ohio.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the paterts of that issue bear date as of the fourth Tuesday thereafter.

Prints

The United States

Registered August 14, 1923

6,863 Title: KEEPS THE CLOTHES DRY. For a nursery apron. The Miller Rubber Co., Akron, Ohio.

6,864 Title: MILLER BABY WEEK. For nipple applicator and breast. The Miller Rubber Co., Akron, Ohio.

6,865 Title: BABY'S COMFORT. For a baby comfort kit. The Miller Rubber Co., Akron, Ohio.

6,866 Title: BABY'S BATH. For a rubber sponge. The Miller Rubber Co., Akron, Ohio.

6,867 Title: NOTHING COMES OUT. For Baby Pants. The Miller Rubber Co., Akron, Ohio.

Labels

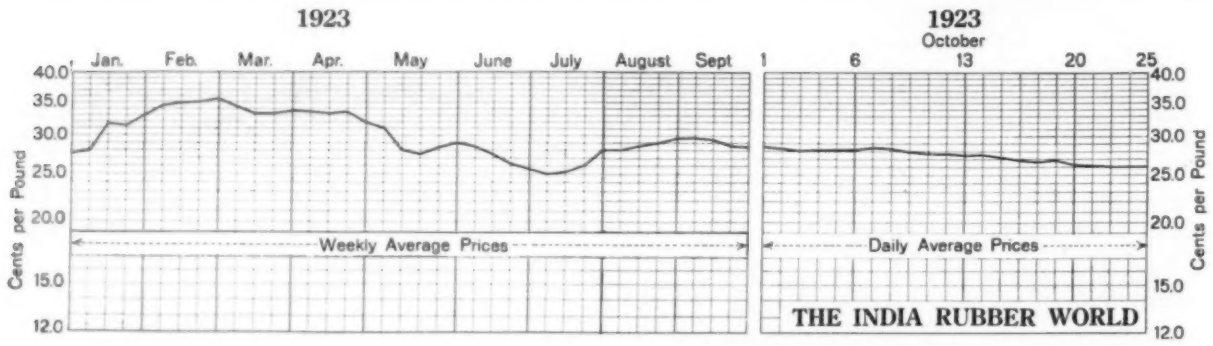
The United States

Registered July 31, 1923

26,277 Title: BABY COMFORT KIT—for a container holding articles for use in caring for a baby. The Miller Rubber Co., Akron, Ohio.

Registered August 7, 1923

26,283 Title: SKWEZ-ME A HOWLING SUCCESS—for Sqwez-Me Squawkers. William Caldwell, New York, N. Y.



Ratio Graph of New York Market Fluctuations—Average Sales Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

THE market for ribbed smoked sheets for October was marked by continuation of the decline begun early in September. Early October quotations showed the highest level, 28½ cents, followed by resumption of the general decline which early in the fourth week brought the price to 26 cents a pound, only one cent above the lowest so far this year, reached early in July.

Week by week the market was continuously dull, unrelieved by any buying interest on the part of consumers. Factories bought only small and scattered lots to supply urgent current needs. The first week opened dull with trade in the ruts. Offerings generally by weak holders were picked up by large dealers to support the price. Crêpe, especially thin pale, scarce and held at a premium. January-March and January-June firmly held. Factories interested in these positions were not buying.

The second week began with prices steady, dropping in sympathy with lower sales in London. Futures declined in proportion also and a fair amount of factory business was consummated. The holiday practically closed the market for the balance of the week.

The third week the market was weak throughout. London showed a marked decline without any buying support. Even though the market was weak, consuming interests did not develop in any marked degree. Inquiries from manufacturers were generally below the market prices. Marked improvement in present market condition is not looked for until tire manufacturers see the way clear to increase tire production schedules for the 1924 season.

Parás and all other grades including balatas ruled dull and quiet in sympathy and were generally neglected throughout the month.

Imports of all grades during September, 1923, were 11,611 tons, compared with 28,288 tons one year ago. Plantation arrivals for September, 1923, were 10,890 tons, compared with 27,899 tons one year ago. Total importations of all grades for the nine months ended September 30, were 238,933½ tons, compared with 205,655 tons for the corresponding period of last year.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATION. October 1. Spot first latex crêpe, 28¼-28½ cents; Oct., 28⅛-28¼ cents; Nov.-Dec., 28¼-28⅜ cents; Jan.-Mar., 28¾-29 cents; Jan.-June, 29¼-29⅜ cents.

October 25. Spot first latex crêpe, 27⅝-27¾ cents; Oct., 27¾ cents; Nov.-Dec., 27½ cents; Jan.-Mar., 27 cents.

October 1. Spot ribbed smoked sheets, 28 cents; Oct., 28-28⅛ cents; Nov.-Dec., 28⅛-28¼ cents; Jan.-Mar., 28¾-29 cents; Jan.-June, 29⅛-29¼ cents.

October 25. Spot ribbed smoked sheets, 25⅞-26 cents; Oct., 25⅞ cents; Nov.-Dec., 26-26¼ cents; Jan.-Mar., 26½-26¾ cents.

October 1. Spot No. 1 amber crêpe, 27-27½ cents; Oct., 27-27½ cents; Nov.-Dec., 27½-27⅝ cents; Jan.-Mar., 28-28¼ cents; Jan.-June, 28¼-28⅜ cents.

October 25. Spot No. 1 amber crêpe, 24½ cents; Oct., 24½ cents; Nov.-Dec., 24½ cents; Jan.-Mar., 25 cents.

October 1. Spot No. 1 rolled brown crêpe, 26¼ cents; Oct., 26¼ cents; Nov.-Dec., 26¼-26⅜ cents; Jan.-Mar., 26½-26¾ cents.

October 25. Spot No. 1 rolled brown crêpe, 24 cents; Oct., 24 cents; Nov.-Dec., 24 cents; Jan.-Mar., 24½ cents.

SOUTH AMERICAN PARAS AND CAUCHO, October 1. Spot, upriver, fine, 26-26¼ cents; islands fine, 24¾-25 cents; upriver coarse, 22-22¼ cents; Cametá, 12¾-13 cents; caucho ball, 22½-22¾ cents.

October 25. Spot, upriver fine, 22¼-22¾ cents; islands fine, 19¼-20 cents; upriver coarse, 17¾ cents; Cametá, 11¼-11½ cents; caucho ball, 17-19 cents.

London

The London market during October was characterized generally by dullness, with prices weak and declining. On October 1 ribbed smoked sheets were quoted at 15⅛ pence, falling off to 13½ pence October 22, from which level an advance to 14 pence was reported October 24. Early in the month London advices attributed the stagnation of the market to cheap selling in Singapore, the bulk of the rubber shipments going direct to New York.

The prevalence of dull conditions in English industry, generally renders it difficult to foresee rapid improvement in the rubber market.

Reported London spot stocks continued to show a steady increase each week during the month. The record is as follows: September 21, 51,483 tons; October 2, 54,309 tons; October 9, 55,368 tons; October 16, 57,217 tons; October 23, 57,686 tons.

New York Quotations

Following are the New York spot quotations per pound, for one year, one month ago, and October 25, the current date:

Plantation Hevea	October 25, 1922	September 25, 1923	October 25, 1923
LATEX			
Rubber latex (Hevea).....	1.25 @	$1.25 @1.30	$1.30 @
CREPE			
First latex	.22¼@	.28¼@.29	.27⅝@.27¼
Off latex	.22½@	.28½@	.27¼@
Amber No. 1.....	.22½@	.28 @.28¼	.24½@
Amber No. 2.....	.22¼@	.27 @.27¼	.24¾@.24½
Amber No. 3.....	.22 @	.26½@	.24 @
Brown, clean, thin.....	.22 @	.27 @.27¼	.24¼@.24½
Brown, speck	.21¾@	.26½@.26¾	.24 @.24¼
Brown, rolled	.21¼@	.26½@.26¾	.24 @
SHEET			
Smoked, ribbed	.22¾@	.28½@.28¾	.25⅞@.26
Smoked, plain	@	†.27¾@.28	@
Unsmoked	@	†.26½@.27	@

Crude Rubber Market—*Continued*

SCRAP	October 25, 1922	September 25, 1923	October 25, 1923
Colombo scrap No. 1	.17 @	.23 @.22	.21 @
Colombo scrap No. 2	.16 @	.22 @.23	.20 @
East Indian			
PONTIANAK			
Banjermassin	.08 @	.07 @.07¼	.07 @.08
Palembang	@	.07½ @	.07 @.08½
Pressed block	.13¾ @	.11¾ @.12	.12½ @.13½
Sarawak	.07¼ @	.07 @	.07 @
South American			
PARAS			
Upriver, fine	.24½ @	.26½ @.27	.22¼ @.22¾
Upriver, fine	*.31 @	*.36½ @	*.31¾ @
Upriver, medium	.21½ @	.24½ @	.20 @
Upriver, coarse	.18 @.18½	.22 @.22½	.17¾ @
Upriver, coarse	@	*.33½ @	*.30 @
Islands, fine	.21 @	.25 @.25½	.19¼ @.20
Island, medium	@	.23¾ @	@
Islands, coarse	.12½ @	.13 @	.11 @
Cametá	.12½ @.13	.13½ @.13¾	.11¼ @.11½
Acre Bolivian, fine	.25 @	.26 @.26½	.22 @.22½
Acre Bolivian, fine	*.31 @	*.36 @	*.32 @
Beni Bolivian	@	.27½ @.27¾	.22¼ @
Madeira, fine	@	.28 @.28½	.23 @
Peruvian, fine	@	.27 @	.21 @
Tapajos, fine	.22 @.22½	.26 @.26½	.21 @
CAUCHO			
Upper caucho ball	.18 @	.23 @.23¼	.18¾ @.19
Upper caucho ball	*.21½ @	*.33¾ @	*.30¼ @
Lower caucho ball	.17 @	.21 @.22	.17 @
Maniçobas			
Ceará negro heads	†.15 @	.22 @	@
Ceará scrap	†.09 @	.09 @	@
Maniçoba 30% guaranty	†.06 @	.18 @	@
Mangabeira, thin sheet	†.15 @	.22 @	@
Centrals			
Central scrap	.14½ @	.16¾ @.17	.12½ @.13½
Central scrap and strip	.14 @	.14 @.16	.09 @.10
Central wet sheet	.04 @.06	.16¼ @.17	.13¼ @.14
Corinto scrap	.14½ @	.16¾ @.17	.13½ @.14
Esmeralda sausage	.14½ @	.28 @	.26 @
Guayule washed & dried	.26 @	@	.26 @
Africans			
Benguela, No. 1, 28½%+	@	@	@
Benguela, No. 2, 32½%+	.06 @.07	.14 @.16	.13 @.15
Congo prime, black upper	.11 @.13	.23 @	.20 @.21
Congo prime, red upper	.11 @.13	.21 @.22	.22 @
Kassai, black	.12 @	.23 @	.21 @.22
red	.11 @.13	.20 @.21	.19 @.21
Gutta Percha			
Gutta Siak	.13¼ @	.16 @	.15½ @.16
Gutta Soh	@	.16 @.24	.26 @
Red Macassar	2.75 @2.80	3.00 @	3.00 @4.00
Balata			
Block, Ciudad Bolivar	.59 @	.73 @.74	.69 @.70
Colombia	.49 @	.60 @	.55 @.56
Panama	.48 @	.60 @	.54 @.55
Surinam, sheet	.67 @	.78 @	.73 @.74
amber	.72 @	.83 @	.76 @.77
Chicle			
Colombia	.19 @.25	.25 @	.25 @
Honduras	.63 @.64	.62 @	.62 @
Venezuela	.65 @	.63 @	.63 @
Yucatan, fine	.68 @	.65 @	.65 @

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.

Comparative Low and High New York Spot Rubber Prices

	October 1923*	October 1922	October 1921
PLANTATIONS			
First latex crêpe	$0.26 @$0.28½	$0.15¼ @$0.22¾	$0.15 @$0.17
Smoked sheet, ribbed	.26 @ .28¼	.15¼ @ .22¾	.14¼ @ .17
PARAS			
Upriver, fine	.22 @ .26¼	.18½ @ .24	.21 @ .23
Upriver, coarse	.18 @ .22¼	.13½ @ .19	.11¼ @ .12
Islands, fine	.19½ @ .25	.16¾ @ .22½	.18 @ .21½
Islands, coarse	.11½ @ .14	.08½ @ .16½	.08 @ .10¼
Cametá	.11¾ @ .13	.09 @ .15	.08¾ @ .10¼

*Figured to October 25, 1923.

Landings, Deliveries and Stocks in London and Liverpool During September

	Landed Sept. Tons	Delivered Sept. Tons	Stocks September 30 1923 Tons	1922 Tons	1921 Tons
London:					
Plantation	9,686	3,595	54,159	70,853	71,813
Other grades	3	5	75	124	362
Liverpool:					
Plantation	†642	†272	†5,893	†7,522	†8,225
Pará and Peruvian	135	141	69	207	1,220
Other grades	.....	6	212	418	457
Totals London and Liverpool	10,466	4,019	60,408	79,124	82,077

† *Official returns from the six recognized public warehouses.*

Reclaimed Rubber

An improvement is noted in regard to manufacturers' needs the past month, notably in boot and shoe reclaim for automobile topping, which is in active production for the approaching 1924 season. Demand continues in good volume for standard tire grades in black, gray, and white for mechanical and molded goods. Prices are lower on practically every grade than those quoted one month ago. Competition is keen and values offered are phenomenal in volume cost and compounding quality.

New York Quotations

October 25, 1923

Prices subject to change without notice

Reclaimed Stocks

FRICTION		
Compounded	lb.	$0.17½ @$0.38
Pure gum friction	lb.	.21½ @ .22½
TUBE		
Compounded	lb.	.12¼ @ .12½
Floating	lb.	.15¼ @ .15½
AUTO TIRE		
Black	lb.	.09 @ .09¼
Dark gray	lb.	.10½ @ .10¾
White	lb.	.13 @ .13¼
Black, washed	lb.	.11 @ .11¼
Light gray	lb.	.10½ @ .10¾
SHOE		
Unwashed	lb.	.10 @ .10¼
Washed	lb.	.13 @ .13½
MISCELLANEOUS		
Mechanical, black	lb.	.09½ @ .10½
High grade red	lb.	.13¼ @ .13½
Truck tire	lb.	.08¼ @ .08¾

New York Average Sales Prices of Spot Rubber

PRICES IN CENTS PER POUND
September, 1923

PLANTATIONS	3*	4	5	6	7	8	10	11	12	13	14	15	17	18	19	20	21	22	24	25	26	27	28	29
Sheet																								
Ribbed smoked		29⅞	29⅝	29⅛	29⅜	29¾	29¾	29⅛	29¼	28⅞	28⅞	29	28¾	28⅞	28⅝	28½	28⅝	28⅝	28½	28⅛	28¾	28¾	28⅜	28⅜
Crêpe																								
First latex		30⅛	29⅝	29⅛	29½	29¾	29⅜	29⅛	29⅜	28⅞	29	29⅛	28⅞	29⅛	28⅞	28¾	28⅞	28¾	28⅝	28⅛	29	28⅞	28½	28½
Off latex		29¼	29	28¾	28⅜	29¼	29⅛	28⅝	28¾	28¼	28½	28⅜	28⅜	28½	28¼	28¼	28⅜	28¼	28¼	28¼	28⅜	28¼	28⅛	28⅛
No. 1 blanket		29⅛	28¾	28⅛	28½	28½	28½	28¼	28⅜	28	28	28⅛	27¾	27⅞	27¾	27½	27¼	27⅜	27¼	27¼	27⅜	27⅜	27⅜	27¼
No. 2 blanket		28½	28	27⅝	28	28	28	27⅜	27⅝	27¼	27½	27½	27¼	27½	27	27⅛	26⅝	26¾	26¾	26⅝	26¾	26¾	26⅝	26⅝
No. 3 blanket		28	27¾	27¼	27½	27⅝	27½	27¼	27⅛	26⅞	26⅞	27⅛	26¾	27	26⅝	26¾	26⅜	26½	26⅜	26⅜	26½	26¼	26⅜	26¼
Thin, clean brown		28⅝	28½	27¾	27⅝	28½	27⅞	27⅜	27⅜	27⅜	27½	27½	27¼	27⅜	27¼	27⅛	27⅜	27¾	27⅛	27¼	27¾	27⅜	26⅞	27⅛
Specky brown		28	27½	27⅛	27½	27¾	27¼	27	27	26⅜	26⅞	26¾	26⅜	26⅝	26⅜	26⅜	26½	26½	26⅜	26½	26⅜	26⅞	26	26⅛
Rolled brown		27¾	27¾	27	26⅞	27¼	27⅛	27⅛	27	26⅜	26¾	26¾	26⅝	26¾	26⅜	26⅜	26½	26½	26⅛	26⅜	26⅞	26⅜	26⅛	26¼

* Holiday.

Imports of Crude Rubber, Gutta Percha, and Substitutes Therefor, into the United States

	September, 1923	
Crude rubber From	Pounds	Dollars
Germany	2,862	846
Netherlands	16,479	4,353
Portugal	53,760	6,989
England	603,168	159,756
Nicaragua	306	59
Panama	1,220	488
Mexico	22,400	5,600
Brazil	1,279,854	291,742
Colombia	490,543	80,798
Ecuador	35,167	5,775
Peru	114,754	42,822
British India	74,560	26,421
Ceylon	3,984,501	1,021,638
Straits Settlements	13,033,997	3,216,593
Java and Madura	2,419,264	625,916
Other Dutch East Indies	3,497,585	974,582
Japan	249,825	37,474
Other Asia	22,400	7,467
Crude rubber totals	25,902,645	6,509,319
Jelutong or Pontianak	210,940	20,456
Balata	243,497	108,896
Gutta percha	130,480	21,816
Other crude (including Guayule) scrap, and reclaimed	861,264	98,558
Total unmanufactured	27,348,826	6,759,045

Imports of Crude Rubber into the United States

QUANTITY IN POUNDS

	1919	1920	1921	1922	1923
January	23,039,209	66,427,415	26,911,753	54,010,946	79,763,620
February	33,506,217	71,354,904	21,933,165	66,744,240	60,379,290
March	64,653,687	82,477,607	28,508,995	64,215,222	69,280,706
April	61,765,830	63,629,269	26,087,408	43,407,359	69,580,014
May	55,478,181	44,099,902	23,890,838	35,725,240	80,107,447
June	36,632,481	43,538,723	34,624,748	50,952,024	79,188,711
July	52,637,808	45,454,437	27,647,874	56,854,758	44,634,798
August	22,459,833	44,047,264	33,103,804	54,332,275	*42,741,430
September	30,792,822	27,883,748	34,546,411	44,344,862	*25,902,645
October	43,726,375	20,516,090	47,642,303	74,315,183	.....
November	55,804,488	32,955,016	51,741,184	54,343,659	.....
December	55,443,490	24,161,761	58,644,821	75,164,624	.....
Total quantity	535,940,421	566,646,136	415,283,304	674,410,392	551,578,661

VALUE IN DOLLARS

	1919	1920	1921	1922	1923
January	$8,020,312	$27,967,288	$7,922,433	$8,110,912	$14,310,825
February	12,059,354	30,646,535	6,885,677	10,827,106	13,150,823
March	25,584,915	37,383,161	6,863,308	10,999,040	10,041,565
April	24,141,110	29,489,666	5,505,177	7,272,098	21,925,814
May	22,441,617	19,788,550	4,051,921	5,427,505	24,953,222
June	14,652,427	19,961,307	5,831,817	7,422,114	23,941,937
July	21,312,269	19,982,359	4,214,459	8,259,754	13,008,840
August	8,785,941	20,097,267	4,938,038	7,884,512	*11,612,618
September	11,449,459	10,957,854	4,753,441	6,202,136	*6,509,319
October	18,729,651	7,518,880	6,694,418	10,189,101	.....
November	25,241,726	11,688,128	7,721,644	7,837,851	.....
December	23,401,332	7,314,638	8,370,344	11,410,959	.....
Total value	$215,820,113	$242,795,773	$73,752,677	$101,843,188	$148,454,963

*Figures for August, 1923, obtained from Department of Commerce Statement No. 1-2001. Figures subject to revision.
Monthly Summary of Foreign Commerce of the United States.

British Malaya Rubber Exports

An official report from Singapore states that the gross exports of rubber from British Malaya in the month of September, 1923, amounted to 21,955 tons (49,180,300 pounds); the amount of rubber imported was 5,269 tons (11,802,300 pounds); so that net exports amounted to 16,686 tons as compared with 17,265 tons in the corresponding month of 1922.

Appended are the comparative statistics:

	1922		1923	
	Gross Exports Tons	Net Exports Tons	Gross Exports Tons	Net Exports Tons
January	18,962	16,027	22,871	18,513
February	20,033	18,426	19,907	15,818
March	19,304	17,812	23,646	18,538
April	14,400	12,539	24,008	18,619
May	24,789	22,095	20,115	15,095
June	19,617	17,330	18,621	13,664
July	21,964	18,822	16,749	11,125
August	21,316	18,575	19,806	12,764
September	20,238	17,265	21,955	16,686
Totals	180,623	158,891	187,678	140,822

SIXTY PER CENT OF THE BELTING USED IN COSTA RICA IS OF rubber, thirty per cent is of leather, and ten per cent is composed of fiber.

The Market for Rubber Scrap

New York

The prices for rubber scrap during the past month have been very well maintained, although the movement of stocks has been slow because the reclaimers are not operating very actively. Increased export inquiry developed about the middle of the month, followed later by a slightly easier tone in scrap prices and lessening of consuming business. Dealers are hopeful that more active market conditions will follow shortly.

BOOTS AND SHOES. Dealers' bids have been steady at prices slightly below those of a month ago, the spread being from $3.00 to $3.12½ per 100 pounds, with little consuming interest apparent.

TIRES. Mixed auto tires, bid at $14-$15 a ton the first of October, declined $1.00 a ton about the 20th of the month.

INNER TUBES. Dealers' bids for all grades delivered hold firm as follows: No. 1 at $4.00-$4.50; No. 2 and Red, $3.00-$3.25, and Mixed at $2.50-$2.75.

SOLID TIRES. Some New England demand is noted at $25 a ton.

AIR BRAKE HOSE. The market is dull and prices nominal.

MECHANICALS. There continues to be no market for this grade.

The following quotations are for prompt shipment in carload quantities, f. o. b. consumers' works:

Quotations for Carload Lots Delivered

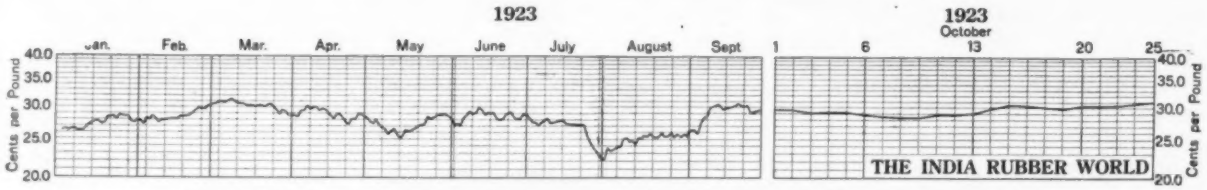
October 25, 1923

Prices subject to change without notice

Boots and Shoes			
Boots and shoes, black	lb.	$0.03	@$0.03½
Trimmed arctics	lb.	.02½ @	.02¾
Untrimmed arctics	lb.	.01¾ @	.01¾
Hard Rubber			
Battery jars, black compound	lb.	.01 @	.01½
No. 1 scrap	lb.	.08 @	.09
Inner Tubes			
No. 1	lb.	.04 @	.04½
No. 2 red	lb.	.03 @	.03¼
Mechanicals			
Black scrap, mixed	lb.	.01 @	—
Heels	lb.	.00½ @	—
Horse-shoe pads	lb.	.01½ @	—
Hose, air brake	ton	14.00	@16.00
regular	ton	13.00	@15.00
Red, scrap, mixed	lb.	.01½ @	.02
White scrap, mixed	lb.	.01½ @	.02
Tires			
PNEUMATIC			
Auto peelings	lb.	.01 @	.01¼
Bicycle	ton	10.00	@12.00
Standard white auto	ton	25.00	@30.00
Mixed auto	ton	13.00	@14.00
Stripped, unguaranteed	ton	10.50	@11.00
SOLID			
Carriage	ton	20.00	@25.00
Irony	ton	10.00	@15.00
Truck, clean	ton	20.00	@25.00

DURING THE CALENDAR YEAR 1922 ENGLAND IMPORTED 167,819 of our inner tubes for automobile tires, valued at $246,222. She has already exceeded that number for the first seven months of 1923, taking 172,423 tubes, while the value, at $225,159, is not far behind that for the entire year 1922.

UNITED STATES' EXPORTS OF LEATHER CLOTH OR ARTIFICIAL leather have already reached a total value for the first seven months of 1923 of $1,594,110, as compared with the total for the entire year 1922, or $1,888,791.



Ratio Graph of New York Market Fluctuations—Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. The trend of the spot cotton market during the past month was downward in the first half, turning upward after the holiday. The lowest price on the decline was 28.20 cents October 9, and the highest before our closing was 30.85 cents October 24. Market conditions have been unsettled, due to crop uncertainties such as damage by drought in the West and ravages of weevils in the East.

The last of the regular monthly government crop condition reports placed this season cotton crop at 49.5 per cent, indicating a yield of 11,015,000 bales with average weather conditions. This is the third inadequate crop in succession. Last season there were consumed in this country, exclusive of linters and foreign cotton, 6,322,000 bales which taken from a crop of 11,000,000 bales would leave about 4,700,000 bales available for export compared with last season's actual exports of 4,823,000 bales, excluding linters.

EGYPTIAN COTTON. Advance of prices for American cotton caused corresponding advances in Egyptian grades. More business was done in Uppers than Sakels, but the price of the latter advanced more than that of Uppers owing to the serious damage caused by fog in various parts of Lower Egypt, reducing the outlook of the Sakel crop to one of average quality only. Presumption on the part of competent experts is to the effect that the "Extra Fine" and "Fine" grades of Sakel will be very scarce this season. The quality of new crop arrivals from Upper Egypt continues satisfactory and the staple is reported better than that of last year's crop.

Compared with American cotton the price of Egyptians appears very attractive, and Uppers especially so. While the favorable margins exist, good and sustained demand is expected for these Egyptian grades.

Quotations during the month past were as follows: Medium Sakels, prompt shipment from Boston, September 29, 35⅞ cents; October 6, 36⅜ cents; October 13, 35½ cents; October 20, 35⅛ cents. Medium Uppers for October-December shipment, were quoted at 32⅞ cents, 32⅞ cents, 32⅛ cents, and 33⅛ cents on the corresponding dates given.

Egyptian cotton crop for the season 1922-23 amounted to 6,683,809 cantars against 5,488,025 cantars in the previous year. For a bigger crop than last year one must go back to 1913-14, when it was 7,684,000 cantars. Egyptian cotton exported from Alexandria during the 12 months was 945,328 bales, the chief importing countries being England 409,691 bales, the United States 204,583 bales, France 109,006 bales, and Italy 61,056 bales.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market has been quiet. Mills report they can readily fill any single or double filling business immediately. Deliveries can be made out of stock as the looms are idle and can be set up. Quiet conditions in the mechanical goods industry account for the slackness in demand for heavy cotton goods and osnaburgs.

Enameling duck mills are supplied with enough orders to keep running into November. New business is desired beyond that time.

According to one report the market in New York is doing better of late, showing more inquiry and more business being closed. Prices of cotton and cotton goods are not in proper relation and

New York Quotations

October 25, 1923

Prices subject to change without notice

Drills

38-inch 2.00-yard	yard	$0.25½@
40-inch 3.47-yard		.14¼@
52-inch 1.90-yard		.28 @
60-inch 1.52-yard		.34⅞@

Duck

CARRIAGE CLOTH

38-inch 2.00-yard	yard	.26¼@
40-inch 1.47-yard		.35⅜@
72-inch 16.66-ounce		.57 @
72-inch 17.21-ounce		.60¼@

MECHANICAL

Hose	pound	.51 @
Belting		.50 @

TENNIS

51-inch 1.35-yard	yard	.41 @

Osnaburgs

40-inch 2.35-yard	yard	.21¼@
40-inch 2.48-yard		.20⅝@
40-inch 3.00-yard		.17⅛@
37½-inch 2.42-yard		.21⅛@

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	@
Bombazine 60 x 48		@
Cashmeres 36-inch, tan		.50 @
Plaids 60 x 48		@
Plaids 56 x 44		@
Surface prints 60 x 48		@
Surface prints 64 x 60		@

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.17¼@
48 x 48, 2.85-yard		.15¼@
64 x 68, 3.15-yard		.16¼@
56 x 60, 3.60-yard		.13½@
48 x 44, 3.75-yard		.13¼@

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	.10 @
40 x 40, 6.15-yard		.08⅛@

Silks

Canton, 38-inch	yard	$0.37½@
Sateens, 39-inch	lb.	.28½@

Tire Fabrics

BUILDING

17¼-ounce Sakellaridis, combed	pound	@
17¼-ounce Egyptian, combed		@
17¼-ounce Egyptian, carded		.62½@
17¼-ounce Peeler, carded		.59 @

CORD

15-ounce Egyptian, combed	pound	@
15-ounce Egyptian, carded		.65 @
15-ounce Peeler, carded		.60 @$0.62

BREAKER

Leno, Peeler, carded		.58 @

CHAFER

9¼-ounce Egyptian, carded	pound	.66 @
9¼-ounce Peeler, carded		.64 @

both are thought to be headed for much higher levels. Present prices are considered inadequate for goods.

SHEETINGS. Business was reported fair early in the month. Generally, however, the market has not been active. Rubber manufacturers are not anticipating their future needs, though liable to pay advances in prices later. Sheetings as yet have not fully reflected the higher cotton market.

TIRE FABRICS. Business in the fabrics continues unsatisfactory. All the tire companies are necessarily seeking materials at very low prices to meet competition. On the other hand, there is no apparent change in the tire fabric situation. It is generally agreed that the outlook is for higher prices. Cotton is advancing daily and fabric manufacturing costs have not been reduced. The gap between the buyer's ideas of price and that which the mills must secure in order to realize a profit on tire fabrics is widening daily, so that many mills which are dependent upon the local trade as an outlet must discontinue operating or take up other lines of goods.

Carded peeler cord of the best grades are quoted as high as 62 cents where mills base their prices on replacement values.

The Cotton Outlook

Cotton Manufacturing Moves Southward

The cotton manufacturing industry of the United States is steadily moving southward. Nearly half of the spindles in the country are located in the South and southern mills now consume nearly two-thirds of all the cotton used and produce considerably more than half the cotton cloth made in the country.

This seemingly anomalous statement is explained by the fact that while the cotton growing states have only about 80 per cent as many spindles as the rest of the country, they keep a larger proportion in operation, and also because—in March, for example—they worked each active spindle two-fifths longer than in the North; the total active spindle hours in the South were one-sixth more. Cotton consumption in northern mills has never regained the volume of the early part of 1920, while southern mills have recently been setting new records.

Prior to 1880 there was practically no cotton manufacturing south of the Mason and Dixon line. Today 16,000,000 of the 20,000,000 spindles are in cotton producing states, chiefly Georgia, North and South Carolina. Between 1880 and 1890 the number of southern spindles increased eight times, but the greatest growth was from 4,368,000 in 1900 to 15,231,000 in 1920. Since 1910 southern mills have increased their output more than 50 per cent, as against little more than 10 per cent for the rest of the country. It took the northern mills the forty years from 1880 to 1920 to double their spindleage.

New England long held the lead in cotton manufacturing because of its proximity to the greatest domestic markets, shipping facilities for export, cheap water power and humid atmosphere, the latter essential to cotton spinning. With the comparatively recent development of air conditioning devices controlling factory humidity anywhere, cotton mills began to spring up throughout the South. Meanwhile the center of population had swung westward and New England had lost much of its advantage as a distributive center. Southern shipping facilities have been greatly improved; steam power has become more efficient than water; and the successful production of textiles where the cotton is grown, especially with uncompressed cotton, has shown the savings resulting from the elimination of unnecessary transportation, and of several profits taken by cotton shippers, local brokers and for compressing, handling, storage, opening, etc.

Recent purchases of southern mills by New England interests and the transfer of complete mill equipment from the North to the South emphasize the trend of development in the cotton manufacturing industry. Lower taxation and cheaper labor costs, due to longer working hours and lower wage scales corresponding to lower costs of living, are big factors in the movement southward. Longer hours is the chief advantage, however, as southern wage scales are tending to increase more rapidly than in the North, and rather more is being done for southern labor to furnish cheap housing and other benefits which do not appear as direct wage costs.

In general the quality of the goods produced in New England is superior to the southern mill product and the average skill of the operatives greater, but southern labor efficiency and textile products quality are rapidly improving. Southern mills have, however, found their greatest success in producing the coarser yarns and less expensive cloths, for which there is a big demand.

United States Cotton Statistics

Census Bureau figures show that cotton consumed during September totalled 483,852 bales of lint and 49,587 of linters, compared with 491,604 of lint and 47,998 of linters in August this year and 494,513 of lint and 61,474 of linters in September last year.

Cotton on hand September 30, in consuming establishments, totalled 773,173 bales of lint and 92,819 of linters, compared with 806,671 of lint and 106,036 of linters on August 31, this year, and 1,063,816 of lint and 97,786 of linters on September 30, last year. Cotton on hand September 30 in public storage and at compresses totalled 2,147,830 bales of lint and 22,197 of linters, compared with 1,179,204 of lint and 24,832 of linters on August 31, this year, and 3,217,939 of lint and 21,592 of linters on September 30, last year.

Imports during September totalled 6,608 bales, compared with 3,420 in August, this year, and 5,012 in September, last year.

Exports totalled 689,435 bales, including 3,742 bales of linters, compared with 244,415, including 3,825 of linters, in August, this year, and 368,390, including 2,902 of linters, in September, last year.

Cotton exports during the nine months ended September 30 were 2,891,000 bales, compared with 3,848,000 bales for the corresponding period of 1922, a decline of 957,000 bales. It appears that Europe is catching up with its purchases of raw cotton after holding back earlier in the year in expectation of a larger crop and lower prices.

There was no corresponding gain in exports of cotton manufactures. Of cotton cloths exported the total for September was 38,000,000 square yards, compared with 52,000,000 in September a year ago. For the nine months of 1923 the yardage was 347,000,000, and for the corresponding period of 1922 it was 449,000,000.

Cotton spindles active during September totalled 33,929,885, compared with 33,708,667 in August, this year, and 33,316,444 in September, last year. Cotton ginned prior to September 25 totalled 3,215,394 bales, including 111,038 round bales, compared with 3,866,396 bales including 76,958 round bales to that date last year and 2,920,392 bales including 70,263 round bales to that date in 1921. American-Egyptian cotton included numbered 3,622 bales compared with 1,660 last year. Sea Island cotton numbered 23 bales compared with 1,084 last year.

Cotton Notes

The cotton crop forecast of the Department of Agriculture on October 2, placing this year's crop at 11,015,000 bales, was based on the condition of the crop September 25, which was 49.5 per cent of normal, indicating a yield of 137.7 pounds per acre. This estimate was some 600,000 bales greater than the estimate of the American Cotton Association, which last year came nearer the final figures by 390,000 bales than the Government. It is announced that a special reduced estimate will be issued by the Department of Agriculture on November 2, based on the condition of the crop on October 25.

The adoption of American standards as a universal basis for grade is meeting with general satisfaction despite British resentment at the outset and has led many British spinners to hope that similar action may be taken with regard to length of staple, thereby surmounting another obstacle to world trade in cotton.

Custom House Statistics

New York

Imports of Crude and Manufactured Rubber

	May, 1922		May, 1923	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*				
Crude rubber				
From Belgium	6,769	$998	67,524	$15,375
France	.....	.....	375,242	113,147
Germany	.....	.....	164,030	56,859
Netherlands	22,400	4,480	396,849	117,161
England	902,455	142,958	14,650,815	4,823,060
Scotland	.....	.....	56,250	8,438
Quebec	.....	.....	38,895	12,097
Nicaragua	.....	.....	7,232	3,714
Panama	.....	.....	2,400	624
Mexico	.....	.....	115	19
Trinidad	600	78	.....	.....
Dominican Republic	.....	.....	41,561	3,125
Brazil	2,095,377	259,417	2,682,701	497,772
Colombia	.....	.....	10,208	2,761
Ecuador	.....	.....	90,641	15,110
Peru	.....	.....	142,541	37,435
Uruguay	.....	.....	13,490	3,827
Venezuela	.....	.....	76,819	9,575
British India	.....	.....	139,083	31,500
Ceylon	.....	.....	6,705,711	2,158,489
Straits Settlements	26,554,795	4,017,140	41,908,425	13,413,784
China	134,400	17,416	.....	.....
Java	2,620,735	456,384	4,813,468	1,388,015
Dutch East Indies	2,615,034	422,856	4,571,749	1,224,252
Far East Republic	.....	.....	100,469	34,070
Hongkong	110,000	5,498	.....	.....
Japan	.....	.....	448,000	147,635
New Zealand	.....	.....	92,764	35,287
Totals	35,062,565	$5,327,225	77,596,982	$24,153,131
Balata	84,895	$44,508	72,694	$48,173
Jelutong (Pontianak)	824,917	75,291	1,548,355	148,485
Gutta percha	192,526	29,461	.....	.....
Rubber scrap and reclaimed	69,284	2,977	1,184,761	91,870
Totals, unmanufactured	36,234,187	$5,479,462	80,402,792	$24,441,659
Chicle *dutiable*	252,937	$126,106	560,714	$277,656
MANUFACTURED—*dutiable*				
Rubber belting for machinery	.....	.....	5,920	6,232
Other manufactures of and substitutes for rubber	.....	110,713	.....	43,175
Totals, manufactured	.....	$110,713	5,920	$49,407

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	.....	.....	48,185	$5,167
Scrap and old	516,429	$23,165	1,038,106	59,658
Footwear				
Boots *pairs*	19,139	51,480	11,670	27,711
Shoes *pairs*	27,533	30,072	34,190	28,237
Canvas shoes with rubber soles *pairs*	120,694	103,081	264,492	201,857
Druggists' rubber sundries	56,422	63,444	37,531	44,873
Hard rubber goods				
Battery jars and accessories	3,950	837	20,188	4,623
Other electrical supplies	3,811	3,060	4,177	1,703
Other hard rubber goods	17,065	14,835	63,543	39,524
Tires				
Pneumatic casings				
For automobiles	102,839	1,293,602	110,376	1,193,347
Others	4,485	17,961	5,320	24,253
Pneumatic tubes				
For automobiles	65,613	118,104	79,330	136,751
Others	2,932	3,797	5,223	4,381
Solid tires				
For automobile and motor trucks	2,157	58,024	4,652	122,164
Others	28,532	8,400	35,041	8,961
Tire repair materials	57,210	21,246	56,426	25,112
Belting	125,272	56,871	300,597	155,215
Hose	238,012	74,067	233,900	96,741
Packing	53,516	24,346	61,120	29,092
Soles and heels	84,176	39,931	112,638	40,525
Thread	59,899	74,860	57,784	59,685
Other rubber manufactures	183,219	128,924	192,974	138,594
Totals, manufactured	.....	$2,212,107	.....	$2,448,174

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	2,650	$1,200	5,600	$1,650
Balata	33,271	19,759	3,172	2,837
Gutta percha	.....	.....	768	753
Totals, unmanufactured	35,921	$20,959	9,540	$5,240
MANUFACTURED				
Rubber manufactures	.....	.....	.....	.....
Rubber substitutes	.....	.....	.....	.....
Totals, manufactured	.....	.....	.....	.....
Chicle	360	$206	.....	.....

Metal Market Review

New York

The metal market continues quiet, there having been little change in the lead, nickel, or tin situation, although there has been some improvement in the zinc market. Copper continues to fluctuate, while it is said that one of the important factors in holding down the price is the receipt of large shipments of this commodity from South America. The present smaller demand from Europe has also an unfavorable influence.

ALUMINUM. Negotiations for contracts with domestic consumers are proceeding slowly. There is lack of fresh inquiry, while the spot demand for this metal is of negligible proportions.

ANTIMONY. During the last part of October the market became stronger, representing a considerable improvement over the first half of the month, when the demand for this metal was very limited.

COPPER. As there is a decline in the demand from abroad, the statistical position of this metal is not at present unusually strong. The Detroit territory, however, reports a continuing good demand from the automotive industries. An interesting feature is the tendency of some consumers to inquire for delivery even into next year. The market has every appearance of at least a brief rally.

LEAD. Although London lead prices lately rose decidedly, those of St. Louis and New York remained almost unchanged. Demand is good but not sufficiently in excess of production to create any premiums. The best domestic demand is from the makers of plumbing supplies, the orders from paint makers having shown recently a falling-off.

NICKEL. Throughout the month of October shot and ingot metal continued to be quoted at 29 cents a pound, while electrolytic is quoted at 32 cents by the leading interest. In the outside market shot and ingot nickel are quoted at 28 cents.

STEEL. The steel market has remained practically unchanged for the last six weeks or more. Consumption, though still heavy, is somewhat less and shipments from mills are well in excess of new orders. While the trade outlook is still somewhat uncertain there is nothing in the nature of demoralization in sight. On the favorable side is the prospect of good equipment orders from the railroads, sustained building demand and unusual November-December building of automobiles. In some quarters these activities are interpreted as forecasting a resumption of capacity business during the first half of next year. Steel bookings for October were 10 per cent more than those for September.

TIN. Following news of heavy Straits shipments during October there was a decided decline in prices, both in London and New York. In the latter part of the month one of the developments was the re-establishing of a premium on spot tin, although futures were inclined to be lower.

ZINC. Prices continued to advance during the early part of October although this rise was not maintained during the last part of the month, when the market was quiet with very little business reported.

Basic Metals

October 25, 1923

	Cents per pound
Aluminum, 98 to 99 per cent pure	25c. to 26c., New York
Antimony	8c., New York duty paid
Copper:	
Prime Lake	12⅞ @ 13
Electrolytic, spot	12⅝ @ 12¾
Casting	12⅜ @ ..
Lead, spot, New York	6.85 @ 6.90
Lead, spot, East St. Louis	6.50 @ 6.55
Tin, spot	41⅛ @ ..
Zinc, spot, New York	6.60 @ 6.65
Zinc, spot, East St. Louis	6.25 @ 6.30

CUBA'S IMPORTATIONS FROM THE UNITED STATES OF RUBBER HOSE were valued during the calendar year 1922 at only $79,461. For the first seven months of the present year, however, that country has already taken such goods to the value of $108,534.

The Market for Chemicals and Compounding Ingredients

New York

COMPOUNDING ingredients in common with all other rubber manufacturing supplies have failed to move actively the past month. The policy of buying only for current needs prevails generally in the rubber trade because of accumulation of unsold goods.

ANILINE. Stocks in makers' hands are liberal. Consuming demand is steady at unchanged prices.

ASBESTINE. The mechanical goods trade furnishes a steady routine outlet for a good tonnage at steady prices.

BARYTES. The use of barytes in lithopone for the paint and rubber industries affords a constant and increasing demand for barytes at steady prices. The material is coming forward freely by rail from the mines.

BENZOL. Early in the month trade was poor. A drop of 4 cents a gallon on all grades had very little effect in stimulating trade.

BLANC FIXE. Good seasonal trade is in progress as in the case of barytes.

CARBON BLACK. Reduced output of automobile tires is reflected in the decreased requirements for carbon black by tire manufacturers. Spot stocks are ample to meet domestic requirements and export trade. There is promise of an increase in the number of carbon black producers in the near future and consequent elimination of excessively higher prices for spot stock. The present trade in black is routine only and consumers are not buying ahead.

CHINA CLAY. China clay has come into a recognized position as an excellent compounding ingredient for conferring increased abrasive resistance to rubber, which insures its movement to the rubber trade in steady volume at moderate cost.

DRY COLORS. Makers of dry colors are reported operating at full capacity.

LITHARGE. Consumers are buying only for current needs. A fair volume is going into rubber shoe and mechanical lines.

LITHOPONE. No lithopone made is superior to the domestic product for either paint or rubber purposes. The output continues large although the requirements for rubber work are temporarily below normal.

SOLVENT NAPHTHA. During the month volume of the spot supply increased and a reduction of 4 cents a gallon took effect and promptly stimulated active demand.

SULPHUR. The market is following its routine course at steady prices.

TALC. Domestic and imported grades are active.

WHITING. Stocks and prices are normal and consumption in good seasonal volume.

ZINC OXIDE. Overproduction of tires earlier in the year has notably affected the demand for zinc oxide by tire makers, who are placing orders only for current needs.

New York Quotations

October 25, 1923

Accelerators, Inorganic

Lead, carbonate	lb.	$0.09¼	@
Lead, red	lb.	.10½	@
sublimed blue	lb.	.08¼	@
sublimed white	lb.	.08¼	@
Lime, flour	lb.	.02	@ 0.02½
R. M. hydrated	ton	25.00	@
superfine	lb.	.02	@
Litharge, domestic	lb.	.10½	@ .11
imported	lb.	*.17	@
Magnesia, carbonate, light	lb.	.08	@ .09
calcined, light (bbls.)	lb.	.23	@ .24
calcined, ex. light (bbls.)	lb.	.40	@
calcined, md. light (bbls.)	lb.	.15	@
calcined, heavy (bbls.)	lb.	.04¼	@ .06
Orange mineral A.A.A.	lb.	.13½	@
Rubber lead	cwt.	10.40	@
Sulzin, ton lots	lb.		@
less ton lots	lb.		@

Accelerators, Organic

A-7	lb.	.75	@ .85
A-19	lb.	.85	@ .95
Accelemal	lb.	.35	@
Accelerene (f. o. b. English port)	lb.	13s.	@
Aldehyde ammonia powder	lb.	.95	@
Aniline (f. o. b.) factory	lb.	.16½	@ .18
sulphate	lb.	.33	@ .35
Cryline	lb.	.60	@
Diphenyl diamino carbazol	lb.	.36	@
Diphenylguanidine	lb.	1.15	@ 1.20
Ethylidene aniline	lb.	.70	@ .75
Excellerex	lb.	.40	@ .45
Formaldehyde aniline	lb.	.47½	@
H. R.	lb.	1.40	@ 1.50*
Hexamethylene tetramine	lb.	.85	@
Lead oleate (bbls.)	lb.	.15	@
Methylene aniline	lb.	.35	@ .42
No. 999	lb.	.15	@
Paraldehyde	lb.	.17	@ .19
Para-nitros-dimethyl aniline	lb.	.35	@
Paraphenylene diamine	lb.	1.40	@ 1.45
Quinodine	lb.	.55	@
Super-sulphur, No. 1	lb.	.50	@ .60
No. 2	lb.	.25	@ .35
Super-X	lb.	.30	@
Tuads (Tetramethyl thiuram-disulphide)	lb.	6.00	@
Thiocarbanilide	lb.	.25	@ .35
Triphenylguanidine	lb.	1.00	@
Vul-Ko-Cene	lb.	.35	@

*Nominal.

Acids

Acetic 28% (bbls.)	cwt.	$3.38	@ $3.63
glacial (carboys)	lb.	.17	@
Cresylic (95% straw color)	gal.	.78	@
(95 dark)	gal.	.74	@ .80
Sulphuric, 66 degrees	lb.	.02	@

Alkalies

Caustic soda	cwt.	3.26	@ 3.75
flake, 76% (factory)	cwt.	3.50	@
solid, 76% (factory)	cwt.	3.15	@

Colors

BLACK

Bone, powdered	lb.	.05½	@ .07½
Carbon black	lb.	.12	@ .18
pressed	lb.	.12	@ .19
Drop	lb.	.07¼	@
Gritless black	lb.	.40	@
Ivory black	lb.	.06¾	@
Lampblack	lb.	.12	@ .14
Microflex	lb.	.13	@ .20
Shawinigan	lb	.16	@ .18

BLUE

Cobalt	lb.	.21	@ .26
Gritless blue	lb.	3.50	@
Prussian	lb.	.50	@ .60
Ultramarine	lb.	.15	@ .35
T. K.	lb.	.25	@ .30

BROWN

Iron oxide	lb.	.04½	@ .05½
Sienna, Italian	lb.	.06	@ .07½
Umber, Turkey	lb.	.05½	@ .07½

GREEN

Chrome, light	lb.	.30	@ .32
medium	lb.	.32	@ .34
dark	lb.	.34	@ .42
commercial	lb.	.12	@
tile	lb.	.13	@ .15
Gritless green	lb.	3.50	@
Oxide of chromium	lb.	.39¼	@ .55
T. K.	lb.	.45	@

RED

Antimony, crimson T. K.	lb.	.40	@ .50
crimson, 15/17% free	lb.	.36	@ .45
crimson, R.M.P. No. 3	lb.	.50	@
crimson F.	lb.	.35	@ .45
Antimony, golden T. K.	lb.	.19	@ .35
golden R.M.P. No. 7	lb.	.21	@
golden, 15/17% free	lb.	.19	@ .22
golden, No. 1	lb.	.30	@
golden, No. 2	lb.	.20	@
Antimony			
Tideco, golden	lb.	$.22	@ .52
7-A	lb.	.35	@
Vermilion, 5% F. S.	lb.	.65	@
Vermilion 15/17% F. S.	lb.	.50	@
T. K.	lb.	.52	@ .55
Arsenic sulphide, red	lb.	.14¼	@
Gritless red (four shades)	lb.	3.50	@
purple	lb.	2.50	@
Indian maroon, English	lb.	.11½	@ .12
Iron oxide, reduced	lb.	.08	@ .11
English	lb.	.10	@ .16
pure bright	lb.	.12	@ .14
Spanish	lb.	.03½	@ .04
Maroon oxide	lb.	.08	@ .12
Red oxide	lb.	.03¼	@ .05½
crimson	lb.	.07	@
English	lb.	.12	@ .16
pure bright	lb.	.13	@
reduced	lb.	.03½	@
Spanish	lb.	.03½	@ .04½
Oximony	lb.	.16	@
Pará toner	lb.	1.00	@ 1.10
Toluidine toner	lb.	2.10	@ 2.75
Venetian	lb.	.02¾	@ .06
Vermilion, English	lb.	1.30	@ 1.35

WHITE

Albalith	lb.	.07	@ .07½
Aluminum bronze	lb.	.55	@ .60
Lithopone, domestic	lb.	.06½	@ .07½
Azo	lb.	.07	@ .07½
Red Seal, imported	lb.	.07	@ .07½
Zinc oxide:			
French process, Florence brand			
Green seal	lb.	.10¼	@ .11¼
Red seal	lb.	.09¾	@ .10¼
U. S. P.	lb.	.16	@ .18
White seal	lb.	.12	@ .12¼
Horse Head brands			
Selected	lb.	.08½	@ .09
Special	lb.	.08½	@ .09
XX red	lb.	.08	@ .08½
Leaded brands			
Lehigh	lb.	.07¼	@ .07¾
Standard	lb.	.07¼	@ .07¾
Sterling	lb.	.07¼	@ .07¾
Superior	lb.	.07¼	@ .07¾
Palmerton process			
Kadox, black	lb.	.09¾	@ .10¼
blue	lb.	.09½	@ .10
red	lb.	.09¼	@ .09¾
Snow white	lb.	.13	@
Azo (factory):			
ZZZ (lead free)	lb.	.08	@ .08½
ZZ (—5% leaded)	lb.	.07¼	@ .07¾
Z (8.15% leaded)	lb.	.07¼	@ .07¾

Colors—*Continued*

YELLOW

Arsenic	lb.	$0.75	@$1.00
Chrome, light and med.	lb.	.17½	@ .18
Gritless yellow	lb.	3.50	@
India rubber	lb.	.75	@
Ochre, domestic	lb.	.02½	@ .03
imported	lb.	.03	@ .03½

Compounding Ingredients

Aluminum flake (carloads)	ton	25.00	@29.00
filler	ton	23.00	@
hydrate, light	lb.	.18	@ .18½
Ammonia carbonate	lb.	.09¼	@ .10½
Asbestine	ton	20.00	@25.00
Aluminum silicate	ton	22.50	@25.00
Barium, carbonate, precip.	ton	66.00	@73.00
dust	lb.	.05	@ .06
Barytes, imported	ton	24.00	@50.00
pure white C. L.	ton	23.90	@
off color	ton	20.00	@
uniform floated	ton	23.90	@
water ground and floated	ton	28.00	@35.00
Basofor	lb.	.04½	@
Blanc fixe	lb.	.04	@ .04½
Carrara filler (factory)	lb.	.01¾	@
Chalk, precip. extra light	lb.	.04¼	@ .05
heavy (f.o.b. factory)	lb.	.03¼	@ .04
China clay, Dixie	ton	22.00	@32.00
Blue ribbon (carloads)	ton	14.00	@
Blue Ridge	ton	20.00	@30.00
L. H. B. (carlots)	ton	13.00	@
Super Dixie	lb.	.02½	@
Tideco	ton	10.00	@
Cotton flock, black	lb.	.12	@
light-colored	lb.	.13	@ .14
white	lb.	.14½	@ .21
Cotton linters clean mill-run	lb.	.07½	@
Fossil flour (powdered)	ton	60.00	@
(bolted)	ton	60.00	@
Glue, high grade	lb.	.30	@ .40
medium	lb.	.20	@ .26
low grade	lb.	.16	@ .19
Graphite, flake	lb.		@
amorphous	lb.		@
Infusorial earth (powd.)	ton	60.00	@
(bolted)	ton	65.00	@
Lime (bolted)	lb.	.02	@
Mica, amber	lb.	.05	@
powdered	lb.	*.15	@
white	lb.	.06	@
Pumice stone, powdered	lb.	.03	@ .05
Rotten st., powd. (bbls.)	lb.	.02½	@ .04½
Soap bark, cut	lb.	.08½	@ .10
Soapstone, powdered, gray	ton	12.00	@
Sodium bicarbonate (bbls.)	lb.	.02¾	@
Starch, powd. corn (bags)	cwt.	3.67	@ 3.77
(bbls.)	cwt.	3.94	@ 4.04
Talc, soapstone	ton	22.50	@
Terra blanche	ton	22.00	@25.00
Whiting, Alba	cwt.		@
chalk, L. H. B.	ton	18.00	@25.00

* Nominal.

Chemical Market—*Continued*

New York Quotations

October 25, 1923

Whiting, commercial	cwt.	$1.00	@
English cliffstone	cwt.	1.50	@
gilders (bolted)	cwt.	1.15	@
K. T.	ton		@
Perfection (carloads)	ton	22.00	@25.00
Quaker	ton	13.00	@15.00
Superfine, L. H. B.	ton	13.50	@22.50
W. T.	ton	20.00	@
York	ton	12.00	@
Wood pulp, XXX	ton	35.00	@
X (f. o. b. factory)	ton	25.00	@

Mineral Rubber

Genasco (factory)	ton	50.00	@52.00
Gilsonite	ton	65.00	@
Hard hydrocarbon	ton	31.00	@42.00
Liquid rubber	lb.	.14	@
Ohmlac Kapak, K-R	ton	50.00	@60.00
K-4	ton	175.00	@
Parra M. R. flux	lb	.06	@
Soft hydrocarbon	ton	30.00	@40.00
320/340 M. P. hydrocarbon	ton	45.00	@50.00
300/310 M. P. hydrocarbon	ton	40.00	@45.00
Pioneer, M. R., solid (fac.)	ton	42.00	@44.00
M. R. granular	ton	52.00	@54.00
Robertson, M. R., solid	ton	35.00	@75.00
M. R. granular (factory)	ton	42.00	@80.00
Rubrax (factory)	ton	60.00	@
Synpro, gran. M. R. (fac.)	ton	55.00	@

Softeners

Avoilas compound	lb.	.13	@
Castor, No. 1, U. S. P.	lb.	.14	@
No. 3, U. S. P.	lb.	.13½	@
Corn	lb.	.12½	@
Cotton	lb.	.13	@ .15
Cycline	gal.	.35	@ .38
Glycerine	lb.	.17	@ .17½
Linseed, raw	gal.	.94	@
Palm lagos	lb.	.09½	@ .10
Palm, niger	lb.	.09	@
Peanut, crude	lb.	.13	@
refined	lb.	.15	@
Petrolatum, standard	lb.	.06	@ .08
Petrolatum, sticky	lb.	.08	@ .10
Pine, steam distilled	gal.	.64	@ .65
Rapeseed, refined	gal.	.80	@
blown	gal.	.92	@
Rosin	gal.	.48	@ .52
Synpro	gal.		@
Soya bean	lb.	.11	@
Tar	gal.	.26	@ .28
Woburn	lb.	.04½	@

Resins and Pitches

Tar, pine, retort	bbl.	11.00	@11.50
kiln	bbl.	11.50	@12.00
Pitch, Burgundy	lb.	.05	@
coal tar	lb.	.01½	@
Fluxol hardwood	ton	40.00	@60.00
pine tar	lb.	.03	@
ponto	lb.	.08	@

Resins and Pitches

Rosin, K (bbl.)	280 lbs.	6.25	@
strained (bbl.)	280 lbs.	6.25	@
Shellac, fine orange	lb.	.80	@ *.90
substitute	gal.	2.00	@

Solvents

Acetone (98.99% drums [6.62 lbs. per gal.])	lb.	.25	@ .25½
Benzol (90% drums [7.21 lbs. per gal.])	gal.	.28	@ .33
pure (drums)	gal.	.42	@
Carbon bisulphide (dms. [10.81 lbs. per gal.])	lb.	.06½	@ .07
tetrachloride (drums, [13.28 lbs. per gal.])	lb.	.10½	@ .16
Hartol No. 303	gal.	.22½	@ .27½
Tankcars	gal.	.21	@
Drums, carlots	gal.	.24	@
Drums, less carlots	gal.	.26	@
Motor gasoline (steel bbls.)	gal.	.18½	@
Naphtha, V. M. & P.	gal.	.15½	@
59@61	gal.	.13	@
63@66	gal.	.15	@
66@68	gal.	.16½	@
Cymene (factory)	gal.	1.50	@
Toluol, pure (7.21 lbs. per gal.)	gal.		@
Turpentine, spirits	gal.	1.00	@
wood, steam distilled	gal.	.92	@

Substitutes

Black	lb.	.09	@ .14
Brown	lb.	.10	@ .15
White	lb.	.10	@ .16
Brown factice	lb.	.07¾	@ .15½
White factice	lb.	.09	@ .14½
T. K., various	lb.	.14	@ .18

Vulcanizing Ingredients

Black hypo, T. K., S. F.	lb.	.19	@
13% F. S., L. H. B.	lb.	.21	@
Sulphur chloride	lb.	.04	@ .13½
Sulphur, Bergenport brand, 100% pure (bbls.)	cwt.	2.70	@ 3.05
(bags)	cwt.	2.45	@ 2.80
Sulphur, Bklyn bd. (bbls.)	cwt.	2.75	@ 3.30
superfine com. (bgs.)	cwt.	2.00	@ 2.50
(bbls.)	cwt.	2.40	@ 2.90

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com.	lb.	.40	@ .42
ceresine, white	lb.	.10	@ .11
carnauba	lb.	.19	@
montan	lb.	.06	@ .06½
ozokerite, black	lb.	.23	@ .24
green	lb.	.27	@ .28
sweet wax	lb.	.10	@ .12

Paraffin

122/124 white crude scale	lb.	.03¼	@ .03
124/126 white crude scale	lb.	.03½	@ .03
120/122 fully refined	lb.	.03 7/10	@
125/127 fully refined	lb.	.0395	@

REPORT OF TIRE AND RIM ASSOCIATION

According to the recent report of The Tire and Rim Association of America, Inc., the number of rims passed during September, 1923, is estimated at 1,585,547. Of this amount more than 50 per cent, or 793,214 rims, are of the 30 by 3½ clincher type; almost 12 per cent are 32 by 4 inches, or are the 30 by 3½ straightside variety; and about 10 per cent are the 31 by 4 clincher type. It is interesting to note the numbers of 20-inch rims for the so-called "balloon" tires. Of these 3,648 are 27 by 3½ inches; 1,053 are 28 by 4 straightside; 10,925 are 29 by 4½ inches; 877 are 30 by 5 inches; 692 are 32 by 6 inches; and 124 are 34 by 7 inches.

REPORT OF RIMS PASSED DURING SEPTEMBER, 1923

Size		Number	Per cent
27 x 3½		3,648	0.2
30 x 3		65,410	4.4
30 x 3½	Clincher	793,214	50.1
30 x 3½	Straightside	188,265	11.9
32 x 3½		8,608	0.5
28 x 4	Straightside	1,053	0.1
31 x 4	Clincher	160,179	10.2
31 x 4	Straightside	9,057	0.6
32 x 4		186,545	11.8
33 x 4		15,239	1.0
34 x 4		578	0.0
29 x 4½		10,925	0.7
32 x 4½		94,330	6.0
34 x 4½		34,129	2.2
36 x 4½		1,347	0.1
30 x 5		877	0.1
34 x 5		10,093	0.7
32 x 6		692	0.0
36 x 6		1,044	0.1
34 x 7		124	0.0
38 x 7		.....	...
36 x 8		.....	...
40 x 8		190	0.0
		1,585,547	100.0

MORE TIRE PRICE ADJUSTMENTS

Following its recent cut in prices of Ford size tires, the Firestone Tire & Rubber Co. announced lower prices of nominally 15 per cent on larger sized casings, the change becoming effective October 15, just one month after the previous reduction. The 4, 4½ and 5-inch sizes were affected principally, and these constitute the bulk of the trade outside the 30 by 3½.

The Fisk Rubber Co. immediately followed with a 15 per cent reduction, while the United States Rubber Co. readjusted its list, reducing certain grades 3½ to 12 per cent and advancing other grades 7½ to 10 per cent, the cuts coming on the larger sizes. The Goodrich organization has also made a reduction in prices of Silvertown cord tires corresponding to the Firestone cut, at the same time advancing prices of Ford sizes approximately 3 per cent. A reduction in prices of larger sized cord tires of 5½ to 15 per cent has been made by the Goodyear Co., who also increased prices on Ford sizes.

Exceptions, however, are noted, the Pennsylvania Rubber Co. telling its dealers that positively no change is contemplated either in price or quality of its Vacuum Cup cords in the larger sizes. The Sterling Tire Corporation also advanced its prices from 5 to 7 per cent.

Leading rubber executives are almost unanimous in the opinion that tire prices are now about as low as they will go and that advances are likely to be made before the end of the year. Higher tire prices are all that is required to make it possible for the well managed concerns to show a profit, for there is no indication that there will be any falling off in tire requirements.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine	Medium	Coarse	Caucho	Cametá
SEPTEMBER 25. By "Francis," Iquitos and Manáos.					
H. A. Astlett & Co.	60,000	25,000	16,500	5,550	.....
Paul Bertuch	64,791	820	6,005	538	.....
L. Littlejohn & Co., Inc.	11,200	.....	.....	.....	.....
Meyer & Brown, Inc.	¶92,960	.....	.....	14,560	.....
Poel & Kelly, Inc.	154,478	.....	.....	.....	.....
SEPTEMBER 25. By "Virgil," Pará.					
H. A. Astlett & Co.	71,000	1,000	6,700	13,400	.....
H. A. Astlett & Co.	‡59,600	.....	‡5,400	.....	.....
OCTOBER 2. By "Polycarp," Pará.					
H. A. Astlett & Co.	28,100	.....	7,500	.....	.....
Paul Bertuch	11,618	.....	.....	.....	.....
Poel & Kelly, Inc.	33,043	.....	.....	.....	.....
OCTOBER 4. By "Southern Cross," Bolivia.					
Paul Bertuch	32,123	.....	.....	.....	.....
OCTOBER 6. By "Lages," Pará.					
Paul Bertuch	11,618	.....	.....	.....	.....
OCTOBER 7. By "Leighton," Pará.					
H. A. Astlett & Co.	.....	.....	11,000	.....	.....
Poel & Kelly, Inc.	.....	.....	22,162	.....	.....
OCTOBER 8. By "Hubert," Pará.					
H. A. Astlett & Co.	19,000	700	15,000	37,200	.....
L. Littlejohn & Co., Inc.	73,920	.....	.....	.....	.....

‡Washed and dried in Brazil. ¶Fine and medium.

Plantations

	POUNDS
SEPTEMBER 19. By "Kendal Castle," Singapore.	
H. A. Astlett & Co.	145,600
Baird Rubber & Trading Co., Inc.	78,400
General Rubber Co.	1,065,200
F. R. Henderson & Co., Inc.	43,800
Meyer & Brown, Inc.	89,600
Poel & Kelly, Inc.	§32,123
William H. Stiles & Co.	44,800
Chas. T. Wilson Co., Inc.	40,320
SEPTEMBER 20. By "Meltonian," London.	
H. A. Astlett & Co.	*22,500
Hood Rubber Co.	*1,125
SEPTEMBER 20. By "Telemachus," Singapore.	
H. A. Astlett & Co.	134,400
Baird Rubber & Trading Co., Inc.	78,400
Fisk Rubber Co.	26,880
Meyer & Brown, Inc.	250,880
H. Muehlstein & Co., Inc.	22,400
William H. Stiles & Co.	336,000
Chas. T. Wilson Co., Inc.	313,600
SEPTEMBER 24. By "Clan MacBrayne," Colombo.	
H. A. Astlett & Co.	78,400
L. Littlejohn & Co., Inc.	100,800
Fred. Stern & Co., Inc.	62,720
SEPTEMBER 24. By "Colorado," Colombo.	
H. A. Astlett & Co.	224,000
L. Littlejohn & Co., Inc.	112,000
Meyer & Brown, Inc.	56,000
Fred. Stern & Co., Inc.	22,400
SEPTEMBER 27. By "Fairfield City," Singapore.	
H. A. Astlett & Co.	89,800
Baird Rubber & Trading Co., Inc.	*22,400
General Rubber Co.	706,800
F. R. Henderson & Co., Inc.	295,600
Hood Rubber Co.	*67,200
Meyer & Brown, Inc.	67,200
H. Muehlstein & Co., Inc.	78,400
H. Muehlstein & Co., Inc.	*44,800
Fred. Stern & Co., Inc.	11,195
William H. Stiles & Co.	11,200
Chas. T. Wilson Co., Inc.	22,400
Chas. T. Wilson Co., Inc.	*11,200
SEPTEMBER 28. By "London Hall," Colombo.	
H. A. Astlett & Co.	22,400
F. R. Henderson & Co., Inc.	22,400
Meyer & Brown, Inc.	56,000
H. Muehlstein & Co., Inc.	44,800
L. Littlejohn & Co., Inc.	11,200
Fred. Stern & Co., Inc.	112,000
SEPTEMBER 28. By "Volendam," Rotterdam.	
L. Littlejohn & Co., Inc.	69,440
OCTOBER 1. By "Algic," Cochin.	
Poel & Kelly, Inc.	33,600
Fred. Stern & Co., Inc.	11,200

*Arrived at Boston.

	POUNDS
OCTOBER 1. By "Gaelic Prince," Singapore.	
H. A. Astlett & Co.	246,400
H. A. Astlett & Co.	*56,000
Baird Rubber & Trading Co., Inc.	268,800
Fisk Rubber Co.	44,800
General Rubber Co.	78,400
F. R. Henderson & Co., Inc.	36,000
Hood Rubber Co.	200,400
Meyer & Brown, Inc.	436,800
H. Muehlstein & Co., Inc.	123,200
L. Littlejohn & Co., Inc.	347,200
Poel & Kelly, Inc.	408,377
Fred. Stern & Co., Inc.	273,427
William H. Stiles & Co.	179,200
Chas. T. Wilson Co., Inc.	94,080
OCTOBER 3. By "Reiyo Maru," Far East.	
L. Littlejohn & Co., Inc.	194,880
Poel & Kelly, Inc.	11,022
OCTOBER 4. By "City of Cambridge," Colombo.	
H. A. Astlett & Co.	112,000
Hood Rubber Co.	*156,590
L. Littlejohn & Co., Inc.	112,000
H. Muehlstein & Co., Inc.	78,400
Poel & Kelly, Inc.	89,600
Fred. Stern & Co., Inc.	62,160
William H. Stiles & Co.	44,800
Chas. T. Wilson & Co.	141,120
OCTOBER 5. By "Ryndam," Rotterdam.	
L. Littlejohn & Co., Inc.	44,800
OCTOBER 5. By "Wray Castle," Singapore.	
H. A. Astlett & Co.	123,200
H. A. Astlett & Co.	*33,600
Baird Rubber & Trading Co., Inc.	11,200
Baird Rubber & Trading Co., Inc.	*89,600
General Rubber Co.	361,800
F. R. Henderson & Co., Inc.	93,860
Hood Rubber Co.	56,000
J. T. Johnstone & Co., Inc.	12,320
L. Littlejohn & Co., Inc.	145,600
Meyer & Brown, Inc.	165,200
H. Muehlstein & Co., Inc.	22,400
Poel & Kelly, Inc.	375,058
Fred. Stern & Co., Inc.	212,703
William H. Stiles & Co.	67,200
Chas. T. Wilson Co., Inc.	228,480
OCTOBER 6. By "Euryades," Far East.	
Baird Rubber & Trading Co., Inc.	22,400
Fisk Rubber Co.	21,280
Hood Rubber Co.	22,037
L. Littlejohn & Co., Inc.	241,920
Meyer & Brown, Inc.	60,480
Poel & Kelly, Inc.	42,782
Fred. Stern & Co., Inc.	8,349
Chas. T. Wilson Co., Inc.	98,560
OCTOBER 8. By "Langdon Hall," Far East.	
H. A. Astlett & Co.	100,800
H. A. Astlett & Co.	*56,000
Baird Rubber & Trading Co., Inc.	100,800
Fisk Rubber Co.	31,360
J. T. Johnstone & Co., Inc.	24,640
L. Littlejohn & Co., Inc.	170,240
Meyer & Brown, Inc.	312,480
Poel & Kelly, Inc.	390,460
Fred. Stern & Co., Inc.	2,240
William H. Stiles & Co.	22,400
Chas. T. Wilson Co., Inc.	268,800
OCTOBER 10. By "Robert Dollar," Far East.	
H. A. Astlett & Co.	44,800
Baird Rubber & Trading Co., Inc.	190,400
General Rubber Co.	111,400
F. R. Henderson & Co., Inc.	11,200
L. Littlejohn & Co., Inc.	11,200
Meyer & Brown, Inc.	179,200
Poel & Kelly, Inc.	89,600
Fred. Stern & Co., Inc.	44,693
William H. Stiles & Co.	89,600
Chas. T. Wilson Co., Inc.	13,440
Chas. T. Wilson Co., Inc.	*11,200
OCTOBER 14. By "Homestead," Colombo.	
Fisk Rubber Co.	5,600
Poel & Kelly, Inc.	39,080
Fred. Stern & Co., Inc.	22,400
OCTOBER 15. By "Nile," Far East.	
Baird Rubber & Trading Co., Inc.	44,800
Fisk Rubber Co.	22,400
General Rubber Co.	642,600
F. R. Henderson & Co., Inc.	56,600
Hood Rubber Co.	*22,400
Meyer & Brown, Inc.	67,200
Poel & Kelly, Inc.	469,753
Fred. Stern & Co., Inc.	123,365
L. Littlejohn & Co., Inc.	212,800
OCTOBER 17. By "Barbadian," London.	
H. A. Astlett & Co.	*8,600
OCTOBER 17. By "Bawean," Colombo.	
General Rubber Co.	1,393,000
J. T. Johnstone & Co., Inc.	49,215
L. Littlejohn & Co., Inc.	22,400
Meyer & Brown, Inc.	78,400
Fred Stern & Co., Inc.	56,011
OCTOBER 18. By "City of Benares," Colombo.	
L. Littlejohn & Co., Inc.	44,800
Fred. Stern & Co., Inc.	78,400

Africans

	POUNDS
SEPTEMBER 24. By "Mississippi," Far East.	
Chas. T. Wilson Co., Inc.	7,920

Balata

	POUNDS
SEPTEMBER 22. By "Paria," Surinam.	
Middleton & Co., Ltd.	32,700
SEPTEMBER 25. By "Francis," Manáos.	
H. A. Astlett & Co.	54,000

Guayule

	POUNDS
SEPTEMBER 16. By "Caronia," Far East.	
Chas. T. Wilson Co., Inc.	2,250
SEPTEMBER 29-OCTOBER 19. By "Railways," Texas.	
Continental Rubber Co.	268,000

United States Crude and Waste Rubber Imports for 1923 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Total 1923	Total 1922	Balata	Miscellaneous	Waste
January ..... tons	29,354	1,233	549	61	.....	.....	31,197	21,867	64	257	382
February	21,815	2,004	308	93	.....	.....	24,220	28,973	25	397	684
March	31,673	1,482	742	19	.....	.....	33,916	28,702	124	738	863
April	29,922	1,095	399	30	142	.....	31,588	14,444	40	1,504	507
May	34,609	1,042	333	24	167	9½	36,184½	20,622	55	463	361
June	31,574	1,032	286	42	.....	.....	32,934	15,750	28	771	300
July	17,459	636	146	23	328	17	18,609	25,245	68	436	121
August	18,083	297	88	30	164	12	18,674	21,764	54	1,039	127
September	10,890	542	69	65	15	30	11,611	28,288	164	165	83
Totals, 8 months, 1923...tons	225,379	9,363	2,920	387	816	68½	238,933½	.....	622	5,770	3,428
Totals, 9 months, 1922.....	196,925	7,201	1,078	48	281	122	205,655	.....	253	3,800	472

Compiled from statistics supplied by the Rubber Association of America, Inc.

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	May, 1922		May, 1923		June, 1922		June, 1923	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*								
Crude rubber								
From France	.....	.....	375,242	$113,147	25	$5	155,982	$39,388
Netherlands	22,400	$4,480	396,849	117,161	417,991	57,387	651,114	186,687
Portugal	.....	.....	.....	.....	.....	.....	.....	.....
United Kingdom	902,455	142,958	15,181,325	5,007,118	2,330,730	367,132	9,558,712	2,859,368
Canada	.....	.....	38,895	12,097	.....	.....	.....	.....
Central America	.....	.....	9,632	4,338	3,875	804	13,875	2,130
Mexico	77,000	15,400	115	19	.....	.....	.....	.....
Brazil	2,095,377	259,417	2,682,701	497,772	1,646,065	195,793	2,247,317	532,044
Peru	.....	.....	142,541	37,435	330	40	107,518	53,029
Other South America	.....	.....	191,158	31,273	51,710	7,468	285,399	92,462
British East Indies	27,069,995	4,089,164	50,688,652	16,196,383	41,377,918	5,947,399	53,977,913	16,696,366
Dutch East Indies	5,280,064	888,531	9,485,989	2,644,128	5,041,231	835,079	11,790,128	3,393,797
Other countries	277,949	27,655	914,348	292,351	82,149	11,007	400,753	86,666
Totals	35,725,240	$5,427,605	80,107,447	$24,953,222	50,952,024	$7,422,114	79,188,711	$23,941,937
Balata	84,895	44,508	72,694	48,173	137,242	86,256	80,483	58,222
Jelutong (Pontianak)	824,917	75,291	1,548,355	148,485	557,282	51,183	913,737	79,894
Gutta percha	210,469	45,912	.....	.....	298,778	46,107	461,450	81,130
Rubber scrap	223,480	17,557	2,113,931	208,633	40,812	2,285	1,256,462	185,828
Totals, unmanufactured	37,069,001	$5,610,873	83,842,427	$25,358,513	51,986,138	$7,607,945	81,900,843	$24,347,011
Chicle ..... *dutiable*	665,902	315,876	.....	.....	417,952	219,611	.....	.....
MANUFACTURED—*dutiable*								
Rubber belting	.....	.....	34,508	25,088	.....	.....	23,432	$15,904
Other manufactures of and substitutes for rubber	.....	154,280	.....	70,749	.....	$184,436	.....	84,008

Exports of Domestic Merchandise

MANUFACTURED								
India rubber								
Reclaimed	144,401	$15,494	548,061	$65,953	259,751	$23,512	545,601	$64,985
Scrap and old	823,762	30,577	1,491,955	70,289	778,571	25,259	1,344,394	64,423
Footwear								
Boots ..... *pairs*	25,408	73,664	17,377	46,833	25,170	67,271	27,883	78,263
Shoes ..... *pairs*	42,291	45,449	38,038	33,704	73,113	49,963	50,871	44,026
Canvas shoes with rubber soles ..... *pairs*	232,952	192,939	368,439	286,738	308,744	227,986	336,133	257,727
Druggists' rubber sundries	75,893	84,714	55,988	61,131	67,005	76,316	66,688	64,583
Hard rubber goods								
Battery jars and accessories	23,949	8,753	47,350	10,545	36,099	12,483	11,553	3,731
Other electrical supplies	8,034	6,063	10,143	5,824	18,835	10,137	15,777	9,202
Other hard rubber goods	29,141	28,112	76,282	53,985	35,494	38,154	65,557	45,949
Tires								
Pneumatic casings								
For automobiles	131,573	1,701,150	134,667	1,474,989	125,385	1,627,690	144,556	1,610,050
Others	5,510	22,868	7,998	34,601	10,151	38,182	8,566	25,527
Pneumatic tubes								
For automobiles	89,017	162,318	101,306	174,923	77,370	152,642	109,481	188,531
Others	3,930	5,046	7,065	7,503	6,344	8,043	5,787	5,067
Solid tires								
For automobiles and motor trucks	4,727	127,807	7,023	178,823	4,738	143,265	8,315	186,474
Others	70,406	21,904	45,179	11,494	85,161	28,233	81,793	20,838
All other tires	.....	.....	.....	.....	.....	.....	.....	.....
Tire repair materials	87,520	31,620	73,405	33,059	85,598	37,053	80,455	30,764
Belting	206,843	88,465	385,175	212,668	148,065	82,413	272,623	161,964
Hose	323,150	110,097	389,923	156,882	331,193	125,456	412,713	170,193
Packing	98,257	48,543	101,216	49,092	103,177	39,852	166,808	73,220
Soles and heels	144,322	58,615	154,631	53,156	145,567	59,339	150,308	53,774
Thread	100,369	111,610	122,506	121,382	89,006	112,113	105,648	106,135
Other rubber manufactures	507,793	260,239	546,236	288,102	389,358	197,943	543,412	290,919
Totals, manufactured	.....	$3,236,047	.....	$3,431,676	.....	$3,183,305	.....	$3,556,345

Exports of Foreign Merchandise

UNMANUFACTURED								
India rubber	610,369	$91,834	2,104,562	$673,100	475,111	72,345	1,747,501	539,956
Balata	33,271	19,759	3,172	2,837	12,000	6,000	6,367	3,703
Jelutong (Pontianak)	.....	.....	.....	.....	.....	.....	.....	.....
Gutta percha, rubber substitutes and scrap	.....	.....	.....	.....	.....	.....	.....	.....
Totals, unmanufactured	643,640	$111,593	2,107,734	$675,937	487,111	$78,345	1,753,868	$543,659
MANUFACTURED								
Gutta percha and india rubber	.....	14	1,031	1,019	.....	896	453	310
India rubber substitutes	.....	.....	.....	.....	.....	.....	.....	.....
Totals, manufactured	.....	$14	1,031	$1,019	.....	$896	453	$310

Details of exports of domestic merchandise by countries during May, 1923, appeared on pages 750-753 of our August issue.

Details of exports of domestic merchandise by countries during June, 1923, appeared on pages 822-824 of our September issue.

Imports of Crude Rubber Into the United States by Customs Districts

	August, 1922		August, 1923		September, 1922		September, 1923	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Massachusetts	1,505,953	$181,999	1,702,767	$450,339	135	$21	.....	.....
New York	31,440,585	7,515,160	39,246,117	10,665,463	582,214	67,400	1,003,303	$262,388
Maryland	629,225	87,491	447,975	131,086	42,452,523	5,957,100	23,553,419	5,908,844
Los Angeles	530,278	68,589	693,710	187,361	1,180,630	156,337	833,375	207,686
San Francisco	33,790	4,710	343,133	93,238	56,100	8,415	131,748	35,669
Washington	44,900	6,653	.....	.....	28,260	7,500	358,400	88,460
Chicago	1,487	592	.....	.....	45,000	5,363	.....	.....
Colorado	146,057	19,318	307,728	85,131	.....	.....	22,400	6,272
Totals	34,332,275	$7,884,512	42,741,430	$11,612,618	44,344,862	$6,202,136	25,902,645	$6,509,319

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Leather Cloth or Artificial Leather Value	Waterproofed Auto Cloth Value
EUROPE													
Austria	.....	.....	.....	.....	84	$186	4,836	$6,255	768	$966	.....	.....	.....
Belgium	$4,002	$279	$160	$1,127	.....	.....	12,412	7,294	1,000	974	$17	$589	$3,262
Bulgaria	.....	.....	.....	.....	.....	.....	5,000	5,500	.....	.....	.....	.....	.....
Denmark	.....	101	47	.....	784	2,124	3,204	3,345	.....	.....	173	170	1,064
Esthonia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Finland	3,776	76	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
France	11,614	2,013	774	5,030	.....	.....	.....	.....	.....	.....	.....	59,828	392
Germany	200	.....	.....	.....	.....	.....	3,888	5,727	.....	.....	.....	.....	.....
Gibraltar	.....	.....	.....	.....	.....	.....	.....	.....	60	51	.....	.....	.....
Greece	.....	167	.....	.....	.....	.....	.....	.....	.....	.....	.....	906	.....
Iceland and Faroe Islands	.....	.....	.....	.....	946	3,413	1,150	4,719	.....	.....	49	.....	144
Italy	.....	.....	.....	.....	24	73	11,813	7,854	.....	.....	97	6,381	1,985
Latvia	1,354	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malta, Gozo and Cyprus Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	287	470	.....	.....	.....	.....	.....	.....	.....	.....	.....	683	.....
Norway	607	1,083	16	.....	1,289	3,696	1,380	1,323	1,518	1,908	213	695	27
Poland and Danzig	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portugal	.....	.....	.....	.....	.....	.....	720	778	.....	.....	402	143	250
Rumania	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Russia in Europe	61	.....	.....	.....	.....	.....	26	54	.....	.....	30	.....	.....
Spain	596	.....	.....	3,007	4	5	14,400	9,808	.....	.....	.....	5,675	1,518
Sweden	1,365	775	.....	.....	39	205	.....	.....	.....	.....	548	6,468	353
Switzerland	1,670	.....	120	.....	.....	.....	83,769	56,131	1,474	2,768	.....	1,647	1,525
Turkey in Europe	.....	.....	.....	.....	.....	.....	3,860	3,426	.....	.....	.....	.....	.....
Ukraine	.....	1,409	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
England	9,756	11,095	6,204	17,286	22,863	47,469	11,273	6,096	723	956	1,616	13,139	17,512
Scotland	2,382	513	.....	.....	1,631	2,214	288	122	8	6	.....	21,256	1,080
Ireland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$37,670	$17,985	$7,321	$26,450	27,664	$59,385	158,019	$118,432	5,551	$7,629	$3,145	$117,580	$29,112
NORTH AMERICA													
Canada—Maritime Provinces	.....	$66	.....	.....	1,993	$7,275	72	$230	.....	.....	$67	.....	.....
Quebec and Ontario	$8,239	7,537	$5,832	$1,999	172	762	3,497	7,329	96	$124	5,087	$24,664	$22,797
Prairie Provinces	143	480	124	.....	.....	.....	.....	.....	152	189	.....	280	.....
Brit. Columbia and Yukon	729	1,352	896	.....	211	798	1,187	1,333	129	227	.....	43	262
British Honduras	35	136	59	.....	.....	.....	.....	.....	336	395	16	.....	.....
Costa Rica	155	622	.....	.....	.....	.....	.....	.....	.....	.....	634	981	.....
Guatemala	.....	171	232	.....	.....	.....	96	111	660	571	200	.....	401
Honduras	165	691	117	.....	.....	.....	.....	.....	914	977	263	224	.....
Nicaragua	97	140	461	.....	6	20	254	231	604	666	633	.....	133
Panama	64	771	544	.....	.....	.....	335	221	3,130	3,169	2,051	508	1,084
Salvador	1,549	47	35	149	.....	.....	.....	.....	486	315	641	.....	264
Mexico	28,617	20,727	12,579	1,168	140	435	344	426	44,006	40,814	13,575	4,461	3,631
Miquelon and St. Pierre Islands	16	.....	.....	.....	132	430	.....	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador	154	1,339	.....	.....	2,073	5,646	18,641	13,235	24	19	590	.....	.....
Bermuda	.....	60	45	.....	.....	.....	10	7	423	348	69	70	75
Barbados	289	.....	.....	.....	.....	.....	.....	.....	396	359	.....	.....	151
Jamaica	276	198	14	.....	.....	.....	528	591	3,493	3,172	650	318	339
Trinidad and Tobago	.....	330	633	.....	.....	.....	.....	.....	1,328	802	68	.....	309
Other British West Indies	104	261	194	.....	.....	.....	74	44	2,300	2,452	.....	220	76
Cuba	4,485	19,897	12,338	.....	.....	.....	619	449	32,291	21,018	2,920	9,482	4,826
Dominican Republic	404	914	319	.....	.....	.....	389	404	4,936	4,028	669	98	656
Dutch West Indies	.....	792	.....	.....	.....	.....	384	393	7,776	5,877	148	.....	.....
French West Indies	39	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Haiti	.....	97	65	.....	.....	.....	.....	.....	.....	.....	208	86	371
Virgin Islands of United States	.....	.....	.....	.....	.....	.....	.....	.....	682	559	.....	.....	50
TOTALS, NORTH AMERICA	$45,560	$56,628	$34,487	$3,316	4,727	$15,266	26,430	$25,004	104,162	$86,081	$28,489	$41,435	$35,425
SOUTH AMERICA													
Argentina	$8,964	$7,093	$1,107	.....	.....	.....	.....	.....	53,138	$40,444	$3,308	$2,206	$6,722
Bolivia	336	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brazil	13,117	3,993	595	.....	.....	.....	.....	.....	.....	.....	.....	1,262	2,187
Chile	14,893	6,367	4,311	.....	42	$233	.....	.....	1,656	1,136	133	1,124	.....
Colombia	381	1,658	53	$202	.....	.....	.....	.....	1,570	979	4,986	655	250
Ecuador	.....	191	1,082	.....	.....	.....	180	$128	192	281	410	538	.....
British Guiana	.....	.....	.....	.....	.....	.....	.....	.....	1,680	1,347	.....	.....	.....
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	647	555	.....	.....	.....
Paraguay	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	.....	378	693	.....	70	285	.....	.....	24	39	.....	149	366
Uruguay	2,135	1,401	440	.....	.....	.....	.....	.....	24,473	18,361	1,188	368	1,354
Venezuela	1,028	3,870	323	.....	.....	.....	.....	.....	.....	.....	1,886	1,010	.....
TOTALS, SOUTH AMERICA	$40,854	$24,951	$8,604	$202	112	$518	180	$128	83,380	$63,142	$11,911	$7,312	$10,879
ASIA													
British India	$5,957	$4,489	$422	.....	.....	.....	.....	.....	5,694	$5,612	.....	$1,246	$1,267
Ceylon	.....	.....	.....	.....	.....	.....	.....	.....	508	302	.....	147	.....
Straits Settlements	.....	74	.....	.....	.....	.....	.....	.....	3,507	2,740	11	.....	241
China	2,063	48	886	.....	36	$90	7,608	$8,043	144	226	54	7,511	2,711
Chosen	.....	150	.....	.....	.....	.....	192	171	.....	.....	.....	.....	.....
Java and Madura	1,434	1,584	1,836	.....	.....	.....	.....	.....	8,054	6,101	463	860	1,573
Other Dutch East Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	106	.....
French Indo-China	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hejaz, Arabia, etc	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	200	311	.....	.....	996	2,500	752	641	860	837	.....	.....	.....
Japan	1,058	1,975	10,379	$10,097	17,828	34,904	39,960	33,306	.....	.....	.....	3,194	3,964
Kwangtung, leased territory	.....	.....	2,407	.....	.....	.....	.....	.....	.....	.....	.....	778	.....
Palestine and Syria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Persia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands	5,865	5,997	2,152	.....	.....	.....	23,256	14,231	128,800	85,764	9,003	2,530	4,277
Siam	.....	.....	7	.....	.....	.....	.....	.....	498	475	.....	195	.....
TOTALS, ASIA	$16,577	$14,628	$18,089	$10,097	18,860	$37,494	71,768	$56,392	148,065	$102,057	$9,533	$16,567	$14,033

United States by Countries During August, 1923

Waterproofed Clothing Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Pneumatic Tubes: Automobile Number	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Tire Repair Materials Value	Druggists' Rubber Sundries Value	Hard Rubber Goods: Battery Jars and Accessories Value	Hard Rubber Goods: Other Electrical Supplies Value	Hard Rubber Goods: Others Value	Other Rubber Manufactures Value
.....	.....	.....	.....	.....	.....	.....	.....	.....	$15	.....	.....	.....	.....	.....
.....	279	$5,101	$52	.....	.....	589	$1,263	.....	149	.....	.....	.....	.....	$2,946
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	3,209	40,090	548	$3,230	$90	1,279	2,438	$32	405	$945	.....	.....	.....	415
.....	140	2,570	.....	.....	.....	170	412	.....	.....	.....	.....	.....	.....	.....
.....	542	9,172	.....	.....	.....	457	1,053	19	8	.....	.....	.....	.....	.....
.....	514	7,646	122	.....	.....	8	53	.....	2,005	544	.....	.....	$3,226	18,270
.....	.....	.....	.....	68	.....	.....	.....	.....	.....	.....	.....	.....	.....	589
.....	4	63	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	75
.....	204	2,685	13	1,751	.....	240	714	.....	363	.....	.....	.....	.....	141
.....	69	842	.....	.....	.....	130	195	.....	.....	.....	.....	.....	.....	.....
.....	1,209	14,150	.....	.....	.....	.....	.....	.....	1,296	242	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	37	.....	.....	.....	.....	101
.....	2,212	27,965	641	195	.....	1,719	2,616	94	134	899	.....	.....	46	1,118
$51	2,581	44,515	971	2,621	.....	3,220	5,548	768	455	178	$477	.....	.....	1,622
.....	10	144	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	376	4,926	.....	.....	.....	273	443	62	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	241	2,186	.....	.....	.....	1,077	2,349	.....	.....	.....	.....	.....	.....	58
.....	1,758	30,176	129	21,785	112	2,125	3,656	50	989	.....	.....	.....	.....	138
.....	1,913	30,447	691	3,465	.....	1,870	2,909	23	.....	.....	172	.....	.....	494
.....	749	12,690	1,215	.....	.....	528	1,229	119	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	125	.....	.....	.....	8	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
630	13,549	184,589	1,363	69,957	.....	3,790	6,420	.....	5,134	15,763	.....	.....	6,566	83,705
388	4	251	.....	748	.....	6	28	.....	.....	.....	.....	.....	.....	2,568
.....	373	4,777	.....	.....	.....	485	730	.....	.....	.....	.....	.....	.....	.....
$1,069	29,936	$424,985	$5,745	$103,820	$327	17,966	$32,056	$1,167	$10,998	$18,571	$649	.....	$9,838	$112,240
$98	30	$580	$13	.....	$46	33	$55	.....	$15	$2	.....	.....	.....	$2,062
1,290	5,267	58,605	795	$4,969	285	1,124	1,950	$148	4,320	4,111	$1,270	$1,639	$9,131	55,289
30	954	7,701	.....	155	.....	368	419	1	491	403	.....	91	25	5,414
1,164	143	1,881	.....	1,044	.....	31	97	.....	65	743	62	.....	137	3,250
.....	4	54	.....	.....	.....	22	29	.....	.....	7	.....	.....	.....	31
183	81	2,081	.....	.....	.....	87	240	.....	5	153	.....	1	.....	364
173	77	1,422	95	170	.....	89	238	33	.....	.....	.....	.....	.....	28
1,018	158	3,553	3	3,417	4	122	274	.....	52	80	.....	.....	47	622
.....	6	88	.....	132	131	.....	.....	.....	100	241	.....	.....	.....	492
45	665	6,835	.....	388	163	507	920	.....	63	147	.....	.....	230	1,329
.....	36	540	.....	208	.....	64	124	.....	.....	.....	.....	.....	.....	23
4,222	4,198	63,014	5,386	2,216	351	6,111	11,471	51	658	3,708	.....	396	1,895	14,352
146	.....	.....	.....	172	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,620	112	1,470	.....	.....	103	137	292	.....	49	18	.....	.....	.....	1,100
73	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25
.....	19	199	.....	255	67	28	42	.....	15	.....	.....	.....	.....	268
.....	532	6,037	.....	540	37	736	1,152	.....	120	116	.....	.....	87	603
.....	146	2,575	19	520	.....	97	345	.....	35	41	.....	13	.....	282
496	107	1,158	576	.....	40	50	92	34	57	442	.....	751	9	31
19,588	5,217	60,227	1,698	20,943	1,580	9,172	14,579	591	1,977	6,745	28	117	1,091	17,375
592	846	8,541	.....	2,765	57	1,315	2,326	.....	84	.....	.....	125	94	1,602
195	79	687	.....	.....	.....	96	126	85	.....	.....	.....	.....	.....	144
.....	48	523	.....	.....	.....	18	37	.....	.....	.....	.....	.....	.....	39
16	224	4,181	66	.....	.....	504	917	.....	107	.....	.....	.....	.....	74
.....	15	170	11	.....	.....	30	31	.....	.....	34	.....	.....	.....	30
$30,949	18,964	$232,122	$8,662	$37,894	$2,864	20,741	$35,756	$943	$8,213	$16,991	$1,360	$3,133	$12,746	$104,829
$8,629	5,022	$63,881	.....	$652	$745	6,626	$9,988	.....	$1,430	$1,302	.....	$546	$1,406	$20,596
.....	30	552	.....	.....	.....	15	19	.....	.....	.....	.....	.....	.....	27
.....	992	10,285	.....	1,883	.....	1,195	2,036	.....	340	1,206	.....	221	323	3,703
775	1,074	14,637	.....	509	159	545	969	.....	175	461	.....	.....	808	10,723
17	551	8,757	$370	313	217	750	1,639	$30	185	1,144	.....	.....	10	4,026
.....	189	3,174	.....	137	.....	160	356	.....	.....	140	.....	.....	.....	603
196	.....	.....	67	102	.....	.....	.....	.....	.....	.....	.....	.....	.....	112
.....	6	68	.....	.....	.....	8	9	.....	5	.....	.....	.....	.....	15
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	174	.....
2,298	820	9,954	.....	1,302	.....	617	1,566	.....	162	613	.....	.....	300	1,266
1,283	945	13,827	.....	317	.....	1,011	2,354	.....	169	10	.....	.....	869	455
655	664	7,177	86	185	11	403	924	.....	188	502	.....	.....	307	401
$13,853	10,293	$132,312	$523	$5,400	$1,132	11,330	$19,860	$30	$2,654	$5,378	.....	$767	$4,197	$41,927
.....	1,018	$11,403	.....	$6,842	$134	1,705	$2,768	.....	.....	$418	$419	.....	.....	$1,905
.....	56	897	.....	.....	.....	57	110	.....	.....	.....	.....	.....	.....	50
.....	374	3,976	$67	2,536	.....	88	152	.....	$14	92	84	.....	.....	1,467
$22	716	7,603	326	.....	882	570	834	.....	.....	3,588	.....	.....	.....	4,612
.....	24	260	.....	.....	.....	24	45	.....	.....	.....	.....	.....	.....	.....
.....	490	6,095	179	1,149	3,391	436	816	$25	266	157	.....	.....	.....	396
.....	12	200	.....	869	.....	146	241	.....	.....	12	.....	.....	.....	.....
.....	24	180	.....	.....	.....	24	27	.....	.....	.....	.....	.....	.....	.....
.....	160	1,942	.....	.....	.....	120	220	.....	69	.....	.....	.....	.....	.....
.....	35	554	.....	.....	.....	44	66	.....	73	149	.....	.....	.....	331
.....	6,118	68,252	1,066	7,632	.....	2,730	4,450	836	51	1,761	.....	$289	$1,540	9,187
.....	80	1,157	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1,027	11,150	.....	.....	.....	623	1,814	.....	111	.....	.....	.....	.....	941
.....	.....	.....	.....	297	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,142	5,337	56,503	1,162	4,028	5,821	3,494	6,168	513	181	1,838	283	8	300	4,340
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	284
$1,164	15,471	$170,172	$2,800	$23,353	$10,228	10,061	$17,711	$1,374	$765	$8,015	$786	$297	$1,840	$23,513

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Leather Cloth or Artificial Leather Value	Waterproofed and Auto Cloth Value
OCEANIA													
Australia	$12,644	$14,919	$5,160	.....	230	$690	468	$198	2,680	$2,923	.....	$27,696	$6,570
British Oceania	.....	.....	.....	.....	.....	.....	40	20	680	565	.....	.....	.....
French Oceania	.....	.....	.....	.....	.....	.....	.....	.....	196	209	.....	.....	.....
New Zealand	3,624	2,783	581	.....	586	1,654	150	343	312	436	577	2,145	655
Other Oceania	.....	.....	.....	.....	.....	.....	.....	.....	1,093	1,148	.....	.....	.....
TOTALS, OCEANIA	$16,268	$17,702	$5,741	.....	816	$2,344	658	$561	4,961	$5,281	$577	$29,841	$7,225
AFRICA													
Belgian Kongo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British West Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British South Africa	$9,419	$7,648	$3,540	.....	732	$2,098	180	$157	5,784	$6,903	$21,901	$7,673	$3,526
British East Africa	.....	15	.....	.....	.....	.....	.....	.....	156	102	.....	895	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Egypt	.....	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,094	283
Algeria and Tunis	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	999	.....
Morocco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	636
Portuguese East Africa	914	.....	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	36
Other Portuguese Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	308	.....
Spanish Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	448
TOTALS, AFRICA	$10,333	$7,698	$3,570	.....	732	$2,098	180	$157	5,940	$7,005	$21,901	$18,969	$4,929
GRAND TOTALS	$167,262	$139,592	$77,812	$40,065	52,911	$117,105	257,235	$200,674	352,059	$271,195	$75,556	$231,704	$101,603

United Kingdom Rubber Statistics

Imports

	August, 1923 Pounds	August, 1923 Value	Eight Months Ended August, 1923 Pounds	Eight Months Ended August, 1923 Value
UNMANUFACTURED				
Crude rubber				
From—				
Straits Settlements	4,409,900	£265,118	42,337,900	£2,553,737
Federated Malay States	1,519,700	99,545	19,741,600	1,215,340
British India	377,800	24,827	5,022,500	312,373
Ceylon and Dependencies	2,009,000	128,087	14,491,900	883,841
Other Dutch Possessions in Indian Seas	199,300	12,793	1,146,800	73,796
Dutch East Indies (except other Dutch Possessions in Indian Seas)	719,000	43,609	7,108,000	426,156
Other countries in East Indies and Pacific not elsewhere specified	19,200	1,113	821,800	54,518
Brazil	337,100	18,583	4,116,500	236,649
Peru	4,100	233	72,900	3,439
South and Central America (except Brazil and Peru)	180,400	9,844	273,900	14,727
West Africa				
French West Africa	13,400	672	765,200	37,543
Gold Coast	43,700	2,293	99,000	4,596
Other parts of West Africa	25,200	1,059	357,400	12,147
East Africa, including Madagascar	23,000	1,260	356,700	19,764
Other countries	161,300	8,515	667,400	38,254
Totals	10,042,100	£617,551	97,379,500	£5,886,880
Waste and reclaimed rubber	107,100	2,195	1,432,800	20,701
Gutta percha and balata	490,600	71,916	5,887,500	783,350
Rubber substitutes	.....	.....	36,800	688
Totals, unmanufactured	10,639,800	£691,662	104,736,600	£6,691,619
MANUFACTURED				
Boots and shoes...*doz. pairs*	12,817	£19,308	127,724	£208,922
Tires and tubes				
Pneumatic				
Outer covers	.....	310,788	.....	2,298,965
Inner tubes	.....	29,889	.....	270,081
Solid tires	.....	35,007	.....	155,222
Other rubber manufactures	.....	81,636	.....	686,208
Totals, unmanufactured	.....	£476,628	.....	£3,619,398

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	506,200	£5,344	6,066,800	£67,214
Rubber substitutes	38,100	875	932,000	19,969
Totals, unmanufactured	544,300	£6,219	6,998,800	£87,183
MANUFACTURED				
Boots and shoes...*doz. pairs*	21,755	£34,423	133,327	£210,579
Tires and tubes				
Pneumatic				
Outer covers	.....	111,720	.....	1,018,564
Inner tubes	.....	23,211	.....	190,133
Solid tires	.....	23,423	.....	198,814
Other rubber manufactures	.....	179,103	.....	1,866,235
Totals, manufactured	.....	£371,880	.....	£3,484,325

Exports—Colonial and Foreign

	August, 1923 Pounds	August, 1923 Value	Eight Months Ended August, 1923 Pounds	Eight Months Ended August, 1923 Value
UNMANUFACTURED				
Crude rubber				
To Russia	861,100	£52,898	1,828,000	£111,276
Sweden, Norway and Denmark	96,700	5,603	1,045,300	65,469
Germany	835,500	49,326	8,705,200	530,265
Belgium	216,900	12,719	2,244,400	146,379
France	2,072,800	127,050	22,740,600	1,478,218
Spain	9,400	601	258,000	16,803
Italy	947,700	55,967	5,996,000	379,189
Austria	.....	.....	100	4
Hungary	.....	.....	45,100	3,421
Other European countries	6,000	350	1,069,100	66,300
United States	124,400	7,406	62,713,600	4,298,743
Canada	20,200	1,093	3,853,100	255,656
Other countries	91,100	5,661	584,000	37,732
Totals	5,281,800	£318,674	111,082,500	£7,389,455
Waste and reclaimed rubber	69,100	788	173,200	1,823
Gutta percha and balata	77,800	9,427	602,100	87,435
Rubber substitutes	.....	.....	2,000	20
Totals, unmanufactured	5,428,700	£328,889	111,859,800	£7,478,733
MANUFACTURED				
Boots and shoes...*doz. pairs*	69	£154	4,314	£7,277
Tires and tubes				
Pneumatic				
Outer covers	.....	12,235	.....	92,783
Inner tubes	.....	1,573	.....	14,740
Solid tires	.....	1,075	.....	8,700
Other rubber manufactures	.....	2,813	.....	27,882
Totals, manufactured	.....	£17,850	.....	£151,382

"WHOLE" RUBBER

A few years ago some interesting experiments in the preparation of "whole" rubber were carried forward by the Department of Agriculture of the Federated Malay States. The process consisted in the evaporation of thin layers of latex, in order to retain all the constituents of latex, and at the same time to inhibit maturation. It was found that this kind of rubber had a high nitrogen content and a rapid rate of vulcanization. The latter characteristic was said to be due to vulcanization accelerators normally present in the serum, which are removed more or less completely in the preparation of sheet and crêpe rubbers, due to washing and machining the new coagulum.

By utilizing such an evaporation process the amount of "rubber" prepared from latex is said to be about 5 to 10 per cent greater than the weight of sheet or crêpe rubber prepared from an equal volume of similar latex. This is due to the fact that the non-caoutchouc constituents of the latex are retained, and will be included as "rubber" in the final product.—*Financial Times.*

United States by Countries During August, 1923—*Continued*

Waterproofed Clothing Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Pneumatic Tubes: Automobile Number	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Tire Repair Materials Value	Druggists' Rubber Sundries Value	Hard Rubber Goods: Battery Jars and Accessories Value	Hard Rubber Goods: Other Electrical Supplies Value	Hard Rubber Goods: Others Value	Other Rubber Manufactures Value
.....	4,826	$63,393	$197	$22,666	$1,397	3,424	$7,957	.....	$2,587	$1,985	$290	.....	.....	$16,442
.....	88	779	.....	.....	.....	47	84	.....	.....	.....	.....	.....	.....	194
.....	6	52	23	457	9	.....	.....	$26	.....	.....	26	.....	.....	.....
.....	2,725	36,732	244	16,907	.....	876	1,886	76	2,641	757	.....	$70	.....	6,042
.....	105	1,186	15	.....	55	143	251	.....	.....	.....	.....	.....	.....	.....
.....	7,750	$102,142	$479	$40,030	$1,461	4,490	$10,178	$102	$5,228	$2,742	$316	$70	.....	$22,678
.....	52	$545	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	336	6,177	.....	.....	.....	306	$871	.....	$59	.....	.....	$360	.....	$525
$2,179	2,033	21,175	.....	$2,293	$49	3,547	6,242	$37	1,913	$389	.....	.....	$172	5,275
.....	386	4,584	.....	.....	.....	213	283	.....	.....	.....	.....	.....	.....	79
.....	329	4,209	.....	1,759	.....	135	221	.....	.....	.....	.....	.....	.....	.....
.....	574	4,225	.....	1,803	.....	188	1,126	.....	272	110	.....	.....	.....	1,331
.....	75	936	.....	.....	.....	.....	.....	.....	.....	338	.....	.....	.....	.....
.....	28	739	.....	.....	.....	26	55	.....	734	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	101
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	267
$2,179	3,813	$42,590	.....	$5,855	$49	4,415	$8,798	$37	$2,978	$837	.....	$360	$172	$7,578
$49,214	86,227	$1,104,323	$18,209	$216,352	$16,061	69,003	$124,359	$3,653	$30,836	$52,534	$3,111	$4,627	$28,793	$312,765

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	July, 1923 Pounds	July, 1923 Value	Four Months Ending July, 1923 Pounds	Four Months Ending July, 1923 Value
UNMANUFACTURED—*free*				
Rubber, gutta percha, etc.				
From United Kingdom....	801,452	$228,540	2,407,426	$775,278
United States.....	1,160,583	308,123	6,620,941	1,902,876
British East Indies:				
India	.....	.....	.....	.....
Ceylon	.....	.....	.....	.....
Straits Settlements	383,139	109,823	2,297,097	724,904
Dutch East Indies...	.....	.....	112,224	30,851
France	.....	.....	.....	.....
Other countries.....	.....	.....	116,052	27,536
Totals	2,345,174	$646,486	11,553,740	$3,461,445
Rubber recovered.....	202,010	18,443	1,013,788	93,822
Rubber, powdered and rubber or gutta percha scrap.....	433,086	12,278	1,985,517	76,196
Balata	1,600	1,274	2,720	2,290
Rubber substitutes	53,533	5,339	307,164	38,872
Totals, unmanufactured..	3,035,403	$683,820	14,862,929	$3,672,625
PARTLY MANUFACTURED				
Hard rubber sheets and rods.	5,837	$3,495	26,179	$13,339
Hard rubber tubes.....	.....	3,205	.....	9,410
Rubber thread, not covered..	2,536	2,794	32,896	37,694
Totals, partly manufactured	8,373	$9,494	59,075	$60,443
MANUFACTURED				
Belting	.....	$16,921	.....	$54,032
Hose	.....	14,903	.....	48,686
Packing	.....	5,267	.....	17,449
Boots and shoes.....*pairs*	16,178	21,691	36,595	64,250
Clothing, including waterproofed	.....	16,043	.....	78,544
Gloves	.....	499	.....	5,180
Hot water bottles.....	.....	3,095	.....	7,689
Tires, solid.....*number*	507	6,041	4,971	44,543
Tires, pneumatic.....*number*	8,315	92,415	44,457	451,449
Inner tubes.....*number*	2,882	3,215	14,977	26,357
Elastic round or flat.....	.....	29,714	.....	114,712
Mats and matting.....	.....	2,360	.....	9,276
Cement	.....	3,721	.....	18,704
Other rubber manufactures...	.....	117,406	.....	578,903
Totals, manufactured....	.....	$333,291	.....	$1,519,774
Totals, rubber imports...	.....	$1,026,605	.....	$5,552,842

Exports of Domestic and Foreign Rubber Goods

	July, 1923 Produce of Canada Value	July, 1923 Re-exports of Foreign Goods Value	Four Months Ending July, 1923 Produce of Canada Value	Four Months Ending July, 1923 Re-exports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber.....	$4,854	.....	$22,626	$28,542
Totals, unmanufactured..	$4,854	.....	$22,626	$28,542
MANUFACTURED				
Belting	$19,943	.....	$72,802	.....
Canvas shoes with rubber soles	137,915	.....	410,723	.....
Boots and shoes.....	38,708	.....	102,229	.....
Clothing, including waterproofed	1,529	.....	7,261	.....
Hose	6,642	.....	35,258	.....
Tires, casings.....	591,808	.....	2,299,374	.....
Inner tubes.....	69,299	.....	234,620	.....
Pneumatic	.....	.....	.....	.....
Solid	11,011	.....	32,502	.....
Vehicle	.....	1,200	.....	2,763
Other rubber manufactures..	17,157	3,513	72,096	14,706
Totals, manufactured....	$894,012	$4,713	$3,266,865	$17,469
Totals, rubber exports...	$898,866	$4,713	$3,289,491	$46,011

AUGUST EXPORTS OF U. S. RUBBER GOODS

Exports of rubber goods from the United States were valued at $3,093,152 during August, a gain of approximately $200,000 over July, 1923, and about $300,000 over August, 1922.

It will be remembered that July showed a distinct loss in rubber goods exports as compared with the earlier months of 1923, due mainly to a considerable decrease in the shipments of automobile tires. During August the decrease in tire shipments continued, exports for the last three months standing as follows: June, 144,566 casings; July, 98,290; and August, 86,227.

The August recovery in the total rubber goods trade resulted in part from greatly increased sales of rubber footwear. Shipments of rubber boots totaled 52,911 pairs, as compared with 47,997 in July; 257,235 pairs of rubber shoes were exported in August, which was a gain of over 100 per cent compared with the 126,488 pairs shipped in July. Canvas rubber soled shoes also showed an increase in August shipments. Sales remained steady in rubber belting, while shipments of hose fell off. Exports of packing, soles, and heels decreased considerably.

A second contributing factor to the August recovery in total rubber goods shipments was an increase in the unit value of automobile casings exported. In June casings were valued at an average of $11.14 each, which advanced to only $11.17 in July. In August, however, a distinct increase in value is registered, the 86,227 casings exported having been valued at $1,104,323, or $12.81 each.—*Commerce Reports.*

INDIA RUBBER WORLD
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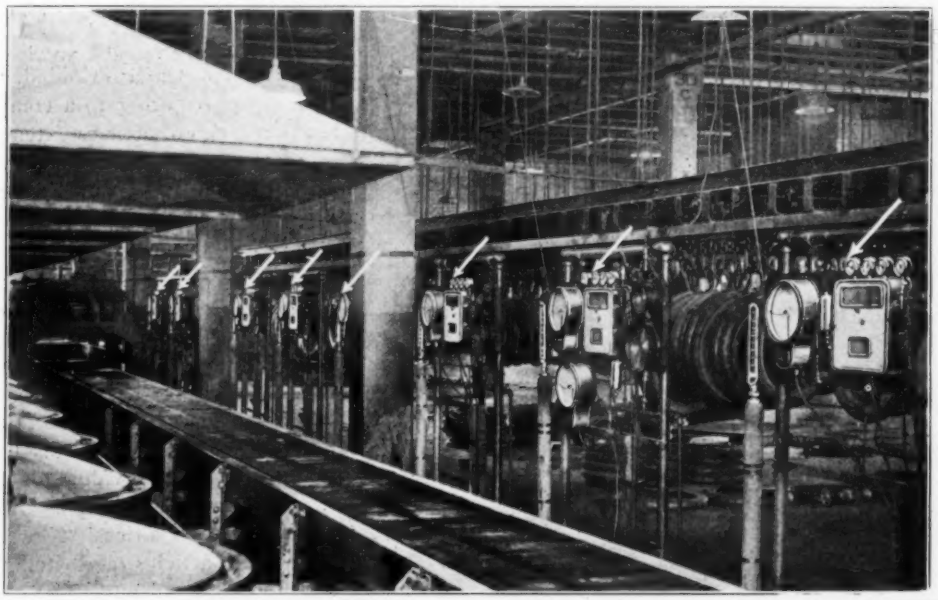
PROOF!

Proof of satisfactory *Tycos* Performance shown here.



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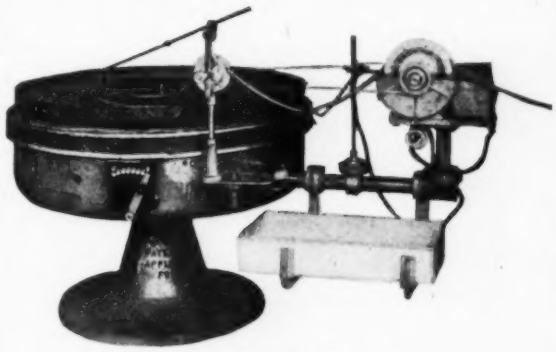
AUTOMATIC MACHINERY



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Our Publicity Page

"Rubberizing" the News

To rubberize, in the ordinary sense, is to coat some supporting surface with a rubber solution or compound. "Rubberizing the news," on the contrary, if we may be permitted to use the phrase, is a conceit of our own which is easily explained.

An Old Term in a New Meaning

A trade paper is commonly said to be a newspaper of the trade it treats. And so it is. But the business building trade paper of today, which holds service to its readers as its aim, is far more than that. Acting as a clearing house for practical information, both technical and commercial, the alert trade paper translates news facts into ideas and points the way to further progress. It estimates the importance of general and trade news to its industry and visualizes the possibilities and probable effects of such news through the medium of descriptive and interpretive feature articles, bringing graphic reality, technical knowledge, imaginative vision and impartial viewpoint to the mere prosaic facts, which do much to stimulate thought and action on the part of those best able to utilize and profit by changing conditions.

This, in the rubber trade, is what we term "rubberizing the news," and it is an absorbingly interesting and helpful service in which THE INDIA RUBBER WORLD has been engaged for over a third of a century.

Telling the Rubber Story of the Japanese Earthquake

Many instances of what we mean might be mentioned, but space permits only a few which occurred during the present eventful year. To cite recent examples, the Japanese earthquake disaster and the abandonment of passive resistance in Germany called for reviews of the extent of the rubber industry in those countries, including manufacturing, import and export trade, and an estimate of their probable future development. These articles were begun in the October issue of THE INDIA RUBBER WORLD and are continued in the present issue.

What Articles Rubber Restriction Suggested

Interest in rubber planting, resurrected by the Stevenson plan of rubber restriction, suggested the summary of important neglected planting opportunities in the Philippines, Brazil, Mexico, the Guianas and Trinidad, also a review of the many factors contributing to a complex situation, which appeared in a series of articles extending from our March to July issues and were based very largely on the personal investigations of our Editor in rubber producing countries.

The Technical Progress Record of Rubber Latex

Turning to the news of technical progress, and citing only one of numerous instances, many articles by authorities have been devoted during the past two years to the revolutionary methods and processes in several lines of rubber goods manufacture now developing around the use of rubber latex. Articles such as these inevitably have a certain aspect of individual or corporate publicity. The same is true of the items in our departments of "New Goods and Specialties," "New Machines and Appliances." Such articles and items as appear in THE INDIA RUBBER WORLD, however, are published solely because of their indisputable news value and helpfulness as records of trade or technical progress.

No "Write-Ups" in THE INDIA RUBBER WORLD

Like all high-class trade papers THE INDIA RUBBER WORLD never publishes so-called "write-ups" to secure or propitiate advertisers. Nothing which fails to bear the obvious stamp of news value or practical trade or technical information ever finds a place in our text pages. Their freedom of paid publicity, favoritism and an excess of reprinted matter indicate our constant devotion to the publication of accurate, timely, helpful and original material, and account for the steady growth of our circulation and reputation as an authority in all matters pertaining to rubber.

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